copyright:

disclaimer:

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project description:

New building for used automotive sales and detailing

code review:

governing municipality:	Lee's Summit, Missouri
governing code:	2018 IBC, 2018 IMC, 2018 IPC, 2018 IFGC, 2018 IFC, 2017 NEC, ADA.ANSI 117.1
zoning:	CP-2
site area:	175,306 sq. ft. (±4.02 acres)
first floor building area:	12,475 sq. ft.
building mezzanine area:	1,385 sq. ft.
total building area:	13,860 sq. ft.
floor area ratio:	0.08
business description:	automobile sales and detailing
construction type:	IIB
occupancy type:	B (Business, S-1 (Auto Shop)
stories:	1 story with mezzanine
building height:	28'-8"
fire suppression:	yes
tabular area:	17,500 sq. ft. (S-1)
sprinkler increase:	300% = 52,500 sq. ft.
total allowable area:	70,000 sq. ft.
total building area:	14,376 sq. ft.
first floor area:	12,944 sq. ft.
mezzanine area:	1,432 sq. ft.

occupant load:

first floor:		
B	4,215 sq. ft. / 150 =	28 occ.
S-1	8,729 sq. ft. / 300 =	29 occ.
first loor total:		57 occupants
mezzanine		
B	930 sq. ft. / 150 =	7 occ.
training rm.	502 sq. ft. / 15 =	34 occ.
mezz. total:		41 occupants

Total building occupants: 98 occupants

plumbing fixtures required:

B	2 water closets
	2 lavatories
	1 drinking fountains
	1 mop sink
S-1	1 water closet
	1 lavatory
	1 drinking fountain
	1 mop sink

req'd plumbing fixtures:	3 water closets
	3 lavatories
	2 drinking fountains
	1 mop sink
plumbing fixtures provided:	4 water closets
	4 lavatories
	2 drinking fountains
	2 mop sinks

exit width required: 98 x 0.2" = 20"
exit width provided: 1 main exit = 68" clear
6 man doors @ 34" = 204"

max. exit access travel distance with sprinkler system (2018 IBC table 1017.2):
B: 300'
S-1: 250'
all paths in building are less than the max. allowable distance

exit from mezzanine - 41 occupants (less than 49), 1 stair required and provided

sheet index:

client:

Lee's Summit Town Center, LLC
Bob Balderston
3200 NW South Outer Road
Lee's Summit, MO 64105

architect:

Powell Minnis, RA
Davidson Architecture & Engineering
4301 Indian Creek Parkway
Overland Park, Kansas 66207
p: 913.451.9390 f: 913.451.9391

civil engineer:

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Henry Miller Mechanical
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plumbing:

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Henry Miller Mechanical
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Pleasant Valley, Missouri 64068
p: 816.883.8818

electrical:

Ernie Cota
KASA Electric, LLC
1206 NW Valley Ridge Drive
Grain Valley, Missouri 64029
p: 816.228.4886

general contractor

Rothwell Construction, Inc.
1500 NW Hwy 7
Blue Springs, Missouri 64014
p: 816.228.8808 f: 816.228.8843

davidson
architecture&engineering

STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6808
REGISTERED ARCHITECT

02.22.2021

Automotive Sales and Detail Center

2100 NE Independence Ave.
Lee's Summit, Missouri 64064

a new facility for

A0.0
cover sheet

davidson
architecture&engineering
4301 Indian Creek Parkway
Overland Park, KS 66207
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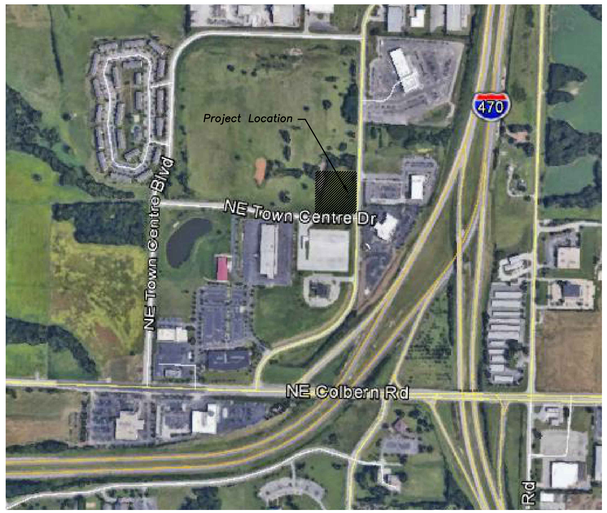
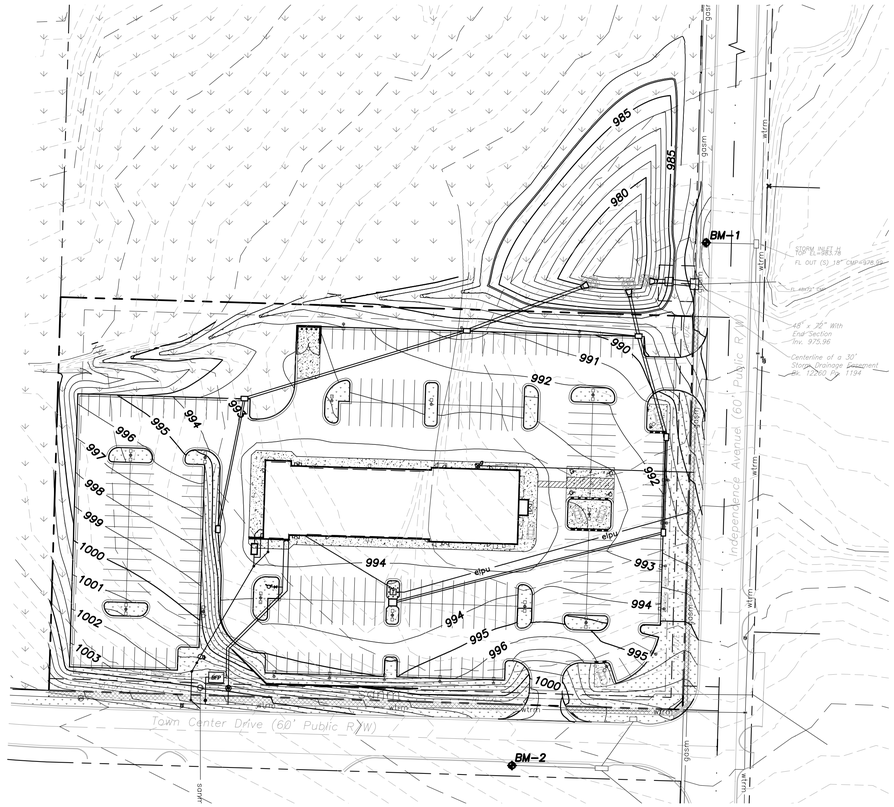
www.davidsonae.com

Commercial Development Plan for Detail Facility – Balderston

Section 29, Township 48 North, Range 31 West
City of Lee's Summit, Jackson County, Missouri



2 Vicinity Map
No Scale



1 Location Map
1"=60'
0 30 60 120

Sheet Index

Civil Engineer:

Davidson Architecture & Engineering, LLC
Mr. Paul A. Miller, P.E.
4301 Indian Creek Pkwy.
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Email: Paul@davidsonae.com

Owner Information

Lee's Summit Town Center, LLC
Bob Balderston
3200 NW South Outer Road
Lee's Summit, MO 64105
Phone: 816-229-4400
Email: bob@hifolksbob.com

Utility Notes

- Boundary information, existing utilities and topographic features shown are based on information supplied by owner, surveyor, and others.
- The existing utility locations shown on these plans are approximate and may not include all utility lines present. The contractor shall be responsible to make One Call and coordinate field location of all existing underground utilities prior to beginning excavation/construction activities.
- The contractor shall be responsible for any damage to any utilities or their structures during excavation/construction activities.
- The contractor shall coordinate and be responsible for connection fees, system development fees, taxes, etc. for all main connections and/or extensions with and from the city and/or respective utility unless otherwise coordinated with the Owner. All utility services for this project shall be coordinated with respective utility company by contractor.
- The contractor shall be responsible for adjusting all at-grade utilities such as manhole covers, valve box covers, etc. to finish grade, whether specifically indicated in these plans or not.
- Utilities shown on the plan with specific elevations and/or structure locations are SUE quality level "B", ie: storm sewer, sanitary sewer, water hydrants & valves, utility poles, etc. All other existing utility information shown is SUE quality level "D", primarily retracement of one-call and city records.

Project Information

governing municipality:	Lee's Summit, Missouri
zoning:	CP-2
site area:	~175,306 s.f. or ~4.02 acres
impervious area:	124,303 s.f. 71% < 80%
green area:	51,003 s.f. 29% > 20%
total building area:	15,993 s.f.
required parking:	service establishment 5 parking spaces per 1,000 s.f. 5 x 16,000 s.f. = 80 parking spaces
actual parking on site:	232 parking spaces

Legal description:

A part of the Northeast Quarter of the Northwest Quarter, Section 29, Township 48 North, Range 31 West, Lee's Summit, Jackson County, Missouri, described as follows: Commencing at the Northeast corner of the Northwest Quarter of said Section 29; thence S 1°35'52"W along the East line of the Northeast Quarter of the Northwest Quarter for 991.63 feet for the Point of Beginning; thence S 1°35'52"W continuing along said East line for 330.00 feet to the Southeast corner of the Northeast Quarter of the Northwest Quarter; thence N 88°15'22"W along the South line of the Northeast Quarter of the Northwest Quarter for 561.55 feet to the Southeast corner of LEE'S SUMMIT TOWN CENTRE, LOT 1 & LOT 2, a subdivision of record; thence N 1°42'31"E along the East line of said subdivision for 330.00 feet; thence S 88°15'22"E for 560.91 feet to the Point of Beginning. Subject to the road right-of-way of Independence Avenue. Containing 4.25 acres more or less.

Per Missouri Department of Natural Resources, there are no open permits for Section 29, Township 48 North, Range 31 West, City of Lee's Summit, Jackson County, Missouri for any oil and gas wells under construction, active, inactive, plugged and/or abandoned.

Local Benchmarks: ◆BM-#

BM-1: Storm Structure, Manhole Cover
Elevation: 982.05'
N: 1013823.1378
E: 2827361.8656

BM-2: Storm Structure, Manhole Cover
Elevation: 982.06'
N: 101382.1725
E: 2827403.8100

Utility Contacts

Sanitary – City of Lee's Summit – phone (816) 969-1900
Water – City of Lee's Summit – phone (816) 969-1900
Storm Sewer – City of Lee's Summit – phone (816) 969-1800
Electric – Evergy – phone (888) 471-5275
Gas – Spire – phone (816) 756-5252
Telephone – At&T – phone (800) 464-7928
Cable – Spectrum – phone (816) 358-8833

Floodplain Note:

The site lies entirely within 'Zone X', areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Property Legend

right of way
property lines
easements
setbacks

Grading Legend

existing minor contour
existing major contour
proposed minor contour
proposed major contour

Utility Legend

existing
proposed

Linetypes

sanm — sanitary main
sans — sanitary service
storm sewer (existing)
storm sewer (solid wall, proposed)
stm — storm sewer (solid wall, proposed)
storm sewer (perforated, proposed)
wtrm — water main
wtrf — water service (fire)
wtrd — water service (domestic)
wtri — water service (irrigation)
gasm — natural gas main
gass — gass — natural gas service schematic
elpu — underground primary electric
elsu — underground secondary electric
elpo — overhead electric
datu — underground cable/phone/data
datsu — underground cable/phone/data service
fence-chainlink
fence-wood
fence-barbed wire
treeline

Symbols

sanitary manhole
service cleanout
fmv — force main release valve
rectangular structure
circular structure
fire hydrant
wv — water valve
water meter
BFP — backflow preventer
natural gas meter
T — service transformer (pad mount)
S — primary switch gear
light pole
C — cable/phone/data junction box
street light
pedestrian street light
electric pole
guy wire
end section

MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP-CALL BEFORE YOU DIG!

General Notes

- All work within the road right-of-way shall conform to the technical specifications and design criteria for public improvement projects of the city of Lee's Summit, MO.
- Erosion Control shall be per the Erosion and Sediment Control Program Manual of the City of Lee's Summit, MO.
- All work and materials shall be subject to inspection and approval by the owner or the owner's representative. Any change or deviation from these plans must be authorized by the owner or the owner's representative.
- All traffic control in connection with construction in the right-of-way shall be in conformance with the Manual of Uniform Traffic Control Devices.
- The contractor shall be required to provide a stabilized construction entrance to prevent mud from being deposited onto adjacent roads.
- The contractor shall be responsible for obtaining all required permits, paying all fees, and otherwise complying with all applicable regulations governing the project.
- The contractor shall protect from damage or injury all property including survey monuments, property markers, benchmarks, etc. Items damaged shall be reset by a professional land surveyor licensed in the state of Missouri, at the contractor's expense.
- The contractor shall be responsible for the restoration of the right-of-way and for damaged improvements such as curbs, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead-ins, signal poles, etc. Damaged improvements shall be repaired in conformance with the latest city standards and to the city's satisfaction.
- The contractor shall sod all disturbed areas within the public street right-of-way.
- Paving shall conform to the soils report, and these drawings, any identified discrepancies shall be brought to the attention of the engineer.
- Contractor shall provide 48-hour notification to the city engineering division to schedule all required inspections.
- All concrete for public improvements shall comply with the Standards and Specifications of the Kansas City Metropolitan Materials Board (KCMMB). Structural concrete shall be 5,000 psi and nonstructural concrete shall be 4,000 psi.
- A right-of-way work permit and/or street excavations permit shall be obtained by the contractor to complete all utility work within the public street right-of-way.

STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021223
PROFESSIONAL ENGINEER
02/16/2021

A New Facility for
Automotive Sales & Detail Center
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.21.2020
drawn by
SLM
checked by
PAM
revisions
02.16.2021 △ FDP

sheet number
C1.0
drawing type
fdp
project number
19076

General Notes:

- The Contractor shall be responsible for obtaining all required permits, paying all fees, and otherwise complying with all applicable regulations governing the project.
- All materials, workmanship, and construction shall meet or exceed the city standards. Where there is conflict between these plans and standards, the higher quality standard as determined by the engineer shall apply. All work shall be inspected and approved by contractor.
- All work and materials shall be subject to inspection and approval by the owner or the owner's representative. Any change or deviation from these plans must be authorized in writing by the owner or the owner's representative prior to work being completed.
- The work associated with and based on these plans, shall be subject to the requirements of, and conform to, the Municipal Code of Lee's Summit, MO, and the standards and specifications in current use. The standards, specifications, details, and procedures sub-referenced therein are hereby incorporated by reference.
- Lineal foot measurements shown on the plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
- No geological information is shown in these plans.
- Prior to commencement of work, the contractor shall notify all utility companies which have facilities in the near vicinity of the construction to be performed.
- All waste material resulting from the project shall be disposed of off-site in an approved landfill. All excavation shall be unclassified. No separate payment will be made for rock excavation. Contractor is responsible for all haul off material.
- The Contractor shall be required to provide a stabilized construction entrance to prevent mud from being deposited onto adjacent roads.
- All mud, dirt, and debris tracked onto the parking lot or any roadway shall be removed immediately by the contractor.
- The Contractor shall be responsible for keeping the public streets in the vicinity of the job site clean and free of rocks, soil and debris. Streets and/or parking areas will be scraped and swept on a daily basis by the general contractor.
- The Contractor shall protect from damage all survey monuments, property markers, benchmarks, etc. Items damaged shall be reset by a professional land surveyor licensed in the state of Missouri, at the contractor's expense.
- Paving shall conform to the geotechnical report and these drawings, any identified discrepancies shall be brought to the attention of the engineer immediately. If no geotech. report is provided for the project, the contractor shall use the minimum design standards as required by the city.
- The Contractor shall notify the City of Lee's Summit Development Engineering Inspection at (816) 969-1200 at lease 48 hours prior to commencement of any construction.
- All concrete for public improvements shall comply with the city standards and specifications. If no city standards and specifications are provided, then the contractor shall comply with the standards and specifications of the Kansas City Metropoiitan Materials Board (KCMMB) unless otherwise noted. Structural concrete shall be 5,000 psi and nonstructural concrete shall be 4,000 psi.
- The contractor shall be responsible for the restoration of the right-of-way and for damaged improvements such as curbs, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead-ins, signal poles, etc (offsite and onsite). Damaged improvements shall be repaired in conformance with the latest city standards and to the city's satisfaction.
- All work within the road right-of-way shall conform to the technical specifications and design criteria for public improvement projects of the city of Lee's Summit, MO or the transportation department of Missouri. A right-of-way work permit and/or street excavations permit shall be obtained by the contractor if required to complete all work within the public right-of-way.
- All traffic control in connection with construction in the right-of-way shall be in conformance with the Manual of Uniform Traffic Control Devices and/or the jurisdictional authority. It is the contractor's responsibility to obtain a traffic control permit if required.
- All waste materials, trash and construction debris shall be collected and stored in dumpsters. No construction waste shall be buried on site. All hazardous waste materials will be disposed of in the manner specified by local, state and federal regulations. Site personnel shall be instructed in these practices, and the construction manager shall be responsible for seeing that these practices are followed.
- Recommendations made by the geotechnical engineer, to be retained by the owner, and contained in the geotechnical report shall govern project conditions unless noted otherwise. Paving shall conform to the geotechnical report, which itself meets or exceeds City's requirments. Any discrepancies shall be brought to the attention of the engineer.
- The Contractor shall grade areas to provide positive drainage.
- The contractor shall be responsible for the coordination of work between suppliers and subcontractors involved in the project, including staging of construction details.
- All disturbed areas shall be maintained for dust control. Sprinkling tank trucks shall be available at all times & used on on-site disturbed areas, and other areas where dust becomes a problem as a result of construction activity.
- Nothing indicated on these drawings shall relieve the contractor from complying with appropriate safety regulations.

Utility Notes:

- Boundary information, existing utilities and topographic features shown are based on information supplied by owner, surveyor, and others.
- The existing utility locations shown on these plans are approximate and may not include all utility lines present. The contractor shall be responsible to contract "One Call" and coordinate field location of all existing underground utilities prior to beginning excavation/construction activities.
- The contractor shall be responsible for any damage to any utilities or their structures during excavation/construction activities. Utilities include but are not limited to a service such as electricity, communication, water, public transportation (including traffic signals), storm systems, and items provided by a public utility.
- The contractor shall coordinate and be responsible for connection fees, system development fees, taxes, etc. for all main connections and/or extensions with and from the city and/or respective utility unless otherwise coordinated with the Owner. All utility services for this project shall be coordinated with respective utility company by contractor.
- The contractor shall be responsible for adjusting all at-grade utilities such as manhole covers, valve box covers, etc. to finish grade, whether specifically indicated in these plans or not.
- Utilities shown on the plan with specific elevations and/or structure locations are SUE quality level "B", ie: storm sewer, sanitary sewer, water hydrants & valves, utility poles, etc. All other existing utility information shown is SUE quality level "D", primarily retracement of one-call and city records.
- Refer to mechanical, electrical, and plumbing (MEP) plans for utility service sizes and exact locations. Refer to site electric plans for electric construction details.
- Provide temporary support for existing utility lines that are encountered during construction until backfilling is complete.
- Backfill all utility trenches according to the most recent edition of the jurisdictional standards.
- All utilities shall be brought within 5' of the building to connect to plumbing contractors work unless otherwise specified.
- The Contractor shall adjust all utility fixtures, manholes and inlets to finished grade as required.
- The Contractor shall maintain 18'' minimum vertical clearance between storm sewer and sanitary sewer pipes and 18'' minimum vertical clearance between sanitary sewer and water main unless otherwise specified.
- Contractor shall prevent entry of mud, dirt, debris, and other material into new and existing storm sewer systems. Should any contamination occur during construction, the contractor shall clean at contractor's expense. Upon completition of all storm sewer improvements, all new and existing pipe and structures shall be cleaned out.
- Electrical, lighting, and data conduit layout shown is for graphical purposes only. See MEP plans for more detail.
- The Contractor shall provide all temporary power, process, and utility service bypasses and connections as required.

Erosion Control Notes:

- The installation of the silt fencing, the maintenance of the drainage swales, and the construction of the stabilized entrance shall be completed prior to any clearing and grading of any portions of the site. Disturbed portions of the site where construction activities have permanently ceased shall be stabilized with permanent seeding no later than 14 days after the last construction activity, refer to SWPPP. Roadway swales shall be stabilized with Erosion Control Devices. Once construction activity ceases permanently in an area, that area shall be stabilized with permanent seed and mulch. Only after the entire site has been stabilized, the silt fencing shall be removed.
- The general contractor, or designated Erosion Control Contractor, shall be responsible for construction and maintenance of erosion control devices and practices. The contractor shall be responsible for implementation of, and ensuring compliance of, the project Storm Water Pollution Prevention Plan (SWPPP), a copy of which shall be obtained from the Design Engineer. The SWPPP shall be maintained on site per NPDES requirements and shall be available for review at any time, by any authorized Federal, State, or local review official, as well as the Design Engineer. The general contractor, or designated Erosion Control Contractor, shall also be responsible for ensuring compliance with, and paying any fees associated with, the State of Missouri General Permit for Stormwater Runoff associated with construction activities, a copy of which shall be maintained in the aforementioned SWPPP.
- This project shall be constructed in compliance with the soil erosion and sedimentation control permit, and conform to the standards and specifications of the city of Lee's Summit, MO, prior to any land disturbance changes.
- Erosion and any sedimentation from work on this site shall be contained on the site and not allowed to collect on any offsite areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes and ponds. Refer to erosion control plans for more information.
- The contractor shall be responsible to control downstream erosion and siltation during all phases of construction. Erosion Control work and procedures shall be in place prior to beginning excavation/construction activities. To ensure progressive stabilization of disturbed earth, Erosion control devices shall be staged, installed and maintained throughout land disturbance activities as directed in the drawings, project manual and in accordance with all federal, state and local standards until the site is stabilized.
- The contractor shall implement and maintain Erosion Control Devices as shown in the drawings and project manual before, and at all times during the construction of this project. Any modifications to the devices due to construction or changed conditions shall be complied with as required or as directed by the city of Lee's Summit, MO.
- The contractor shall be responsible for installation and maintenance of all Erosion Control Devices. This includes providing berms, silt fence, or other means to prevent erosion from reaching the right of way and offsite boundaries. In the event the prevention measures are not effective, the contractor shall remove any debris and erosion, restoring the right of way to original or better condition.
- Contractor is to provide erosion protection for all storm sewer inlets.
- If any of the Erosion Control Devices on the site are deemed inadequate or ineffective, the city of Lee's Summit, MO has the right to require additional Erosion Control measures at the expense of the general contractor.
- If any pump-driven dewatering is needed, it shall be discharged though a filter bag over a well-vegetated area. The pump must discharge at a non-erosive velocity. If necessary, an approved energy dissipater may be used.
- Permanent BMP's for any disturbed land area shall be completed by the general contractor within 5 calendar days after final grading or the final earth change has been completed. When it is not possible to permanently stabilize a disturbed area after land disturbance activity ceases, temporary Erosion control devices shall be implemented immediately. All temporary Erosion Control Devices shall be maintained until permanent BMP devices are implemented. All permanent BMP's will be implemented and established before a certificate of compliance is issued.
- Strip topsoil only from those areas that will be disturbed by excavation, filling, road building, or compaction by equipment. Refer to the geotechnical report for depths of stripping. Put sediment basins, diversions, and other controls into place before stripping.
- When topsoiling, maintain needed erosion control practices such as diversions, grade stabilization structures, berm, dikes, level spreaders, waterways and sediment basins.
- Grades on the areas to be topsoiled which have been previously established shall be maintained.
- Bonding – Immediately prior to dumping and spreading of topsoil, loosen the subgrade by discing or scarifying to a depth of at least 4", to permit bonding of the topsoil and subsoil.
- The general contractor shall inspect the Erosion Control Devices once every 14 days under any circumstances, within 24 hours of rainfall, and daily during a prolonged rain event unless otherwise noted in the SWPPP or by the jurisdictional authority. A log of inspection report shall be maintained and accessible in accordance with National Pollution Discharge Elimination System (NPDES) requirements. Any required maintenance shall be provided within 72 hours.
- Install silt fence, inlet filters, and other Erosion Control Devices as indicated in the drawings, per APWA and authority regulations, and at additional affected areas as necessary. Build-up of sediment shall be removed promptly per authorities regulations. If silt fence decomposes or becomes ineffective prior to the end of expected usable life and the barrier is still required, the silt fence shall be replaced promptly. Sediment shall be removed from sediment traps or basins when design capacity has been reduced to 50%. Contractor shall flare the ends of the silt fence uphill in order to temporarily impound runoff.
- Earthen berms shall be regularly inspected, and inspected after each rainfall event. Repairs to earthen berms shall be made immediately. If the earthen berm shows signs of erosion, and it is determined that material must be added to fix the berm, the material shall be properly placed, compacted and reseeded. The berm shall be reseeded and stabilized, as needed, to maintain its soundness whether or not there has been any rainfall.
- Drainage swales shall be inspected regularly and after every rainfall event. Repairs to drainage swales shall be made immediately. If the flow channel and/or outlets show signs of deficiency, the damaged area(s) shall be restabilized and reseeded, as needed, to prevent further damage. If additional measures are needed to eliminate issues, contractor shall notify the engineer for possible modifications.
- Refer to the jurisdictional authority for temporary gravel construction entrance details. If not specified, refer to APWA standards. The entrance and exit areas of the project shall be cleared of all vegetation, roots, and other objectionable material. The gravel shall be placed to the proper dimensions and graded to a smooth and even slope. Construction entrance drainage shall be provided to carry water to a sediment trap or other suitable outlet.

Stockpiling Notes:

- Select stockpile location to avoid slopes and natural drainageways, avoiding traffic routes. On large sites, re-spreading is easier and more economical where topsoil is stockpiled in small piles located near areas where they will be used.
- Sediment Barriers – Use sediment fences or other barriers where necessary to retain sediment.
- Temporary Seeding – Protect topsoil stockpiles by temporarily seeding as soon as possible, not to exceed 14 days, weather permitting, after the formation of the stockpile.
- Permanent Vegetation – If stockpiles will not be used within 12 months, they must be stabilized with permanent vegetation to control erosion and weed growth.
- All stockpiled soils shall be maintained in such a way as to prevent erosion from leaving the site. Silt fence must be installed around the perimeter of the stockpile.

Seeding Notes:

- Seeding shall be as follows unless otherwise stated in the landscape plans.
- Annual rye grass, wheat, or oats should be used for temporary seeding. Apply rye grass at 120lbs. per acre, wheat or oats at 100lbs. per acre.
- A mixture of 65% kentucky bluegrass and 35% chewing fescue or creeping red fescue should be used for permanent seeding. Apply the mixture at 2lbs. per 1000ft^2.
- Seedbed preparation-Install necessary mechanical erosion and sedimentation control practices before seeding, and complete grading according to the approved plan. Lime and fertilizer needs should be determined by soil test. Apply the lime and fertilizer evenly and incorporate into the top 4"-6" of soil by discing or other suitable means.
- All seeding shall be performed during favorable weather conditions and only during normal and accepted planting seasons when satisfactory growing conditions exist. The planting operations shall not be performed during times of extreme drought, when ground is frozen or during times of other unfavorable climatic conditions unless otherwise approved by owner's representative. The contractor assumes full and complete responsibility for all such plantings and operations.
- Seed should be labeled in accordance with U.S. Department of Agriculture rules and regulations under the federal seed act and comply with the requirements of the Missouri seed law. Labels contain important information on seed purity, germination, and presence of weeds. Weed seed should not exceed 1.0% by weight of the mixture.
- Apply seed uniformly with a cyclone seeder, drill, cultipacker seeder, or hydroseeder. Small grains should be planted no more than 1" deep, and grasses and legumes no more than ½".
- Generally, a permanent stand of vegetation cannot be determined to be fully established until soil cover has been maintained for one full year from planting. Inspect seeded areas for failure and make necessary repairs and re-seedings within the same season, if possible.
- The Contractor shall seed all disturbed areas unless otherwise noted by landscape plans. Immediately after seeding, mulch all seeded areas with unweathered small grain straw, spread uniformly at the rate of 1-2 tons per acre or 100lbs (2-3 bales) per 1000ft^2. The mulch should be anchored with disc type mulch anchoring tool or other means as approved by the jurisdictional authority. Mulch matting may be used in lieu of loose mulch.
- The Contractor shall sod all disturbed areas within the public street right-of-way. Refer to city and state standards for proper installation.

Demolition Notes:

- At the site, the Contractor shall maintain the required documents for immediate review, included but not limited to: Site Safety Plan, Demolition Permits, Street Closure Permits, Contract Documents, Demolition Plans, Salvage Verification Forms, SWPPP Etc.
- The Contractor shall notify all utility companies for field verification and disconnection of utilities prior to any work. Coordination is required for both temporary and permanent utility services that serve the site including, but not limited to: water lines, power, telephone, cable, storm sewer, sanitary sewer with the city and/or respective utility.
- The Contractor is specifically cautioned that the locations and/or elevation of existing utilities as shown on these plans are based on records of the various utility companies, and where possible, measurements taken in the field. The information is not to be relied on as being exact or complete. Contractor shall contact One Call utility information service for utility locates. The Contractor must call the appropriate utility companies at least 72 hours before any excavation to request exact field location of utilities. The Contractor shall also coordinate and allow access for utility companies to perform any disconnection or relocation activities. It shall be the responsibility of the Contractor to relocate all existing utilities which conflict with the proposed improvements shown on the plans.
- Remaining building structures and remaining utility services shall be protected from damage. Damage to any existing features to remain will be replaced at the Contractor's expense.
- Areas disturbed during demolition shall be thoroughly evaluated by the geotechnical engineer responsible for site preparation prior to placement of structural fill. All disturbed soils shall be undercut prior to placement of structural fill, per the geotechnical recommendations. Contractor shall notify the geotechnical engineer at least 72 hours prior to placement of structural fill.
- Excavations created by the removal of any existing utility lines that extend below design grades shall be cut wide enough to allow use of heavy construction equipment to compact the fill. Base of the excavations shall be thoroughly evaluated by the geotechnical engineer prior to placement of fill. If existing utilities are to be left in-place, existing trench backfill shall be evaluated in accordance with the recommendations of evaluation of existing fill.
- The Contractor shall be responsible for obtaining all Federal, State, and local permits, obtaining all inspections, and shall conform to all governing codes and regulations required to perform necessary abatement during demolition, should hazardous materials be encountered.
- Contractor is responsible for legally disposing of all materials and associated cost of interim storage facilities.
- For tree & stump removal, the Contractor shall remove all root systems from the site not designated to be saved. Materials disturbed during removal of stumps shall be undercut and replaced with structural fill. A zone of desiccated soils may exist in the vicinity of the trees. The desiccated soils have a higher swell potential and shall be undercut and replaced with structural fill.
- No construction waste shall be buried on site. All hazardous waste materials will be disposed of in the manner specified by local, state and federal regulations.

Retaining Wall Notes:

- Site retaining wall improvements shall be designed by a licensed professional engineer retained by the contractor. The wall engineer and contractor shall satisfy themselves of the conditions of the surrounding site features and any interactions with the proposed improvements.
- Retaining wall design drawings and specifications shall be provided to the owner and owner's representative for review and approval. All retaining wall designs shall be signed and sealed by a registered Professional Engineer licensed in the state of Missouri. Design services shall be included in retaining wall pricing.
- Refer to Retaining Wall drawings for wall information. Civil plan set shall only be used for general location and spot elevations.
- The Contractor is responsible for coordinating all inspections, certifications, permits, fees and close out of the wall unless otherwise determined. Contractor shall notify wall design engineer for final inspection. Contractor shall include in construction cost for all of the above items related to the installation of the retaining wall.
- Any wall shown is a schematic representation of the proposed walls. The spot elevations denoting retaining walls are provided on the site grading plan.
- If the wall is greater than 30'' and is in an accessible area, guard rails are required per code.

Americans with Disabilities Act (ADA) Notes:

- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.

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STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021231
PROFESSIONAL ENGINEER
02/16/2021

Notes & Detail Center

A New Facility for
Automotive Sales & Service
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.21.2020
drawn by
SLM
checked by
PAM
revisions
02.16.2021 △ FDP

sheet number
C1.1
drawing type
fdp
project number
19076

Local Benchmarks:

BM–#

BM–1: Storm Structure, Manhole Cover
Elevation: 982.05'
N: 1013823.1378
E: 2827361.8656

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

Floodplain Note:

The site lies entirely within 'Zone X', areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Fire Protection Notes:

a. Plans and specifications, in accordance with NFPA 24, for the private fire line shall be submitted for review and approval prior to installation.
b. Underground fire line installation including thrust blocks shall be inspected prior to being backfilled.
c. Hydrostatic testing and flushes shall be completed with the fire department as a witness

Utility Legend

existing
proposed

Linetypes

- sanm — sanitary main
- sans — sanitary service
- storm sewer (existing)
- storm sewer (solid wall, proposed)
- stm — storm sewer (solid wall, proposed)
- storm sewer (perforated, proposed)
- wtrm — water main
- wtrf — water service (fire)
- wtrd — water service (domestic)
- wtri — water service (irrigation)
- gasm — natural gas main
- gass — natural gas service schematic
- elpu — underground primary electric
- elsu — underground secondary electric
- elpo — overhead electric
- datu — undgrnd cable/phone/data
- datsu — undgrnd cable/phone/data service
- fence–chainlink
- fence–wood
- fence–barbed wire
- treeline

Symbols

- (S) sanitary manhole
- co service cleanout
- fmv force main release valve
- rectangular structure
- circular structure
- fire hydrant
- wv water valve
- (M) water meter
- BFP backflow preventer
- natural gas meter
- T service transformer (pad mount)
- S primary switch gear
- light pole
- C cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

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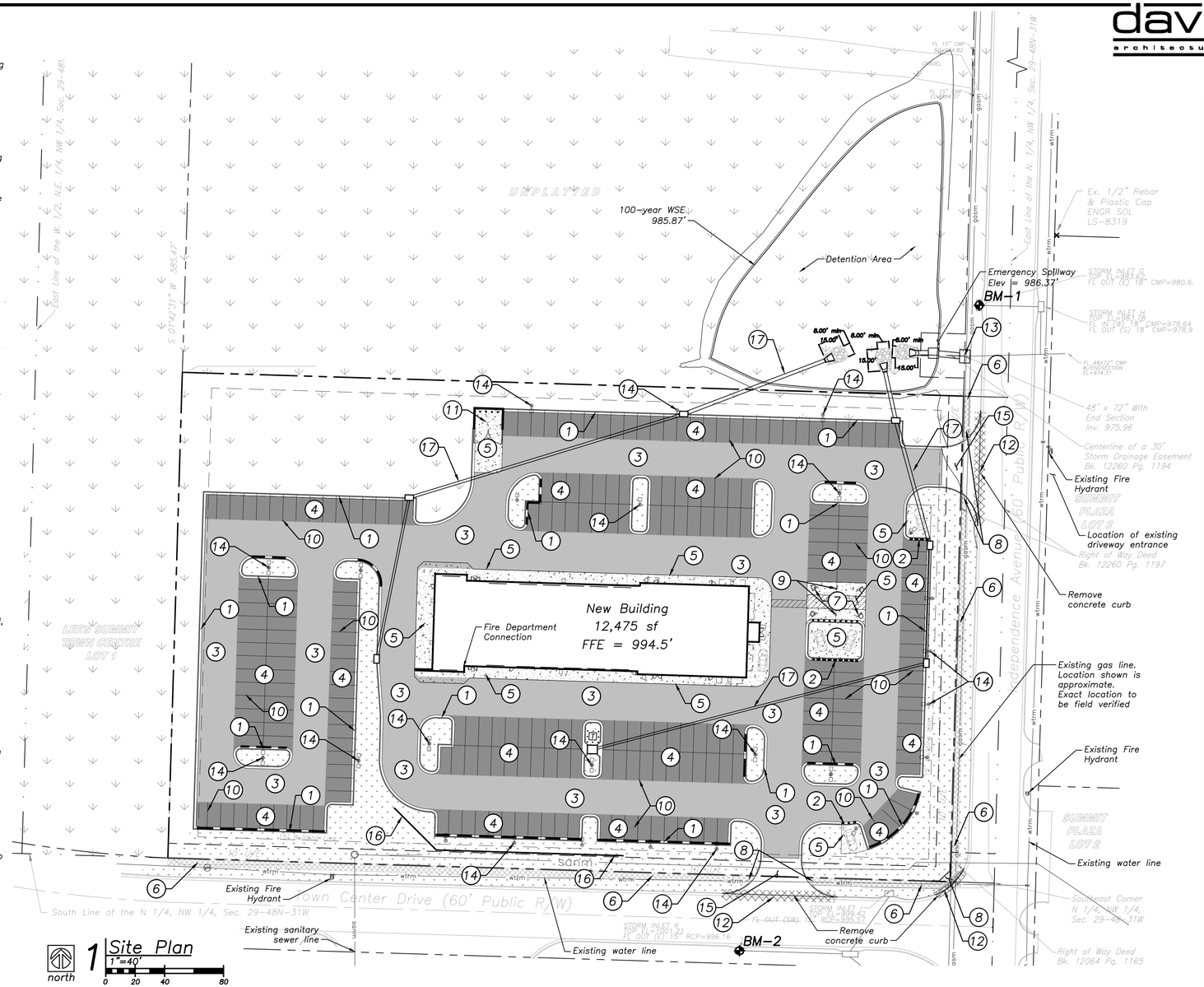
Demolition Notes

1. Contractor will coordinate with respective utility all existing utilities that serve the site including but not limited to water lines, power, telephone, cable, storm sewer, sanitary sewer.
2. The Contractor is specifically cautioned that the locations and/or elevation of existing utilities as shown on these plans are based on records of the various utility companies, and where possible, measurements taken in the field. The information is not to be relied on as being exact or complete. The Contractor must call the appropriate utility companies at least 72 hours before any excavation to request exact field location of utilities. It shall be the responsibility of the Contractor to relocate all existing utilities which conflict with the proposed improvements shown on the plans.
3. The Contractor shall protect offsite improvements (including but not limited to sidewalks, drives, utilities, existing streets, curbs and paving) surrounding the project boundary from demolition damage.
4. The Contractor shall notify all utility companies for field verification and disconnection of utilities prior to any work. The Contractor shall contact the One Call utility information service & utility companies for utility locates. The Contractor shall coordinate and allow access for utility companies to perform any disconnection or relocation activities.
5. The Contractor shall maintain at the demolition site the required documents for immediate review (IE. Site Safety Plan, Demolition Permits, Street Closure Permits, Contract Documents, Demolition Plans, Salvage Verification Forms, SWPPP Etc.). Inspections of erosion control devices after any rainfall event that causes runoff. Development Engineering Inspection requires copies of the inspections after the site is stabilized.
6. Prior to demolition, all applicable erosion control devices are to be installed.
7. Damage to any existing features to remain will be replaced at the Contractors expense to exiting or better condition.
8. All broken concrete and other debris from demolition shall be removed from the site. Areas disturbed during demolition shall be thoroughly evaluated by the geotechnical engineer responsible for site preparation prior to placement of structural fill. All disturbed soils shall be undercut prior to placement of structural fill, per the geotechnical recommendations.
9. The Contractor shall strip all remaining vegetation, topsoil, debris and other unsuitable materials from the proposed construction areas. Stripping depths shall be adjusted to remove all vegetation and root systems. The actual stripping depth shall be based on visual examination by the Geotechnical Engineer. Topsoil removed during stripping operations can be used for final site grading within the landscaped areas. Care shall be exercised to separate these materials to avoid incorporation of the organic matter in structural fill sections.
10. For tree & stump removal, the Contractor shall remove all root systems from the site not designated to be saved. Materials disturbed during removal of stumps shall be undercut and replaced with structural fill. A zone of desiccated soils may exist in the vicinity of the trees. The desiccated soils have a higher swell potential and shall be undercut and replaced with structural fill.
11. Excavations created by the removal of any existing utility lines that extend below design grades shall be cut wide enough to allow use of heavy construction equipment to compact the fill. Base of the excavations shall be thoroughly evaluated by the geotechnical engineer prior to placement of fill. If existing utilities are to be left in–place, existing trench backfill shall be evaluated in accordance with the recommendations of evaluation of existing fill.



north

1 Site Plan

1"=40'
0 20 40 80

Construction Legend

- concrete pavement
- standard asphalt
- heavy duty asphalt
- concrete sidewalk
- CG–1 standard curb & gutter
- CG–1 standard dry curb & gutter
- CG–2 standard curb & gutter
- CG–2 standard dry curb & gutter

Demolition Legend

- Remove curb

Property Legend

- right of way
- property lines
- easements
- setbacks

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
- proposed major contour

Construction Notes:

1. Construct standard CG–1 wet or dry concrete curb & gutter per City of Lee's Summit, MO where indicated (see legend). Dry curb is pitched out to not hold water.
2. Construct standard CG–2 wet or dry concrete curb & gutter per City of Lee's Summit, MO where indicated (see legend). Dry curb is pitched out to not hold water.
3. Construct heavy–duty asphalt pavement, Re: C4.3. (see legend)
4. Construct standard–duty asphalt pavement, Re: C4.3 (see legend)
5. Construct concrete pavement, Re: C4.3. (see legend)
6. Construct concrete sidewalk, Re: C4.2. (see legend)
7. Parking, hatching, accessible aisles, and universal symbol to be painted blue with 4" stroke as applicable, typ.
8. Construct ADA accessible sidewalk ramp, ramps shall comply with City Standards and Details. Re: C2.5 & C4.5.
9. Install ADA parking signage, with one van accessible sign.
10. Proposed striping: parking, etc., typ., 4" white stripe per arch plans.
11. Trash enclosure, Re: Arch. Plans.
12. Match existing pavement elevation
13. Remove existing flared end section on 72" CMP storm pipe
14. Proposed site lighting by others.
15. Construct commercial entrance, per City's standards.
16. Construct ~167 L.F. modular block retaining wall. Designed by others.
17. Proposed storm sewer see sheet C3.3 for detail (private).

General Notes

- All work and materials shall be subject to inspection and approval by the owner or the owner's representative. Any change or deviation from these plans must be authorized by the owner or the owner's representative.
- All traffic control in connection with construction in the right–of–way shall be in conformance with the Manual of Uniform Traffic Control Devices.
- The contractor shall be required to provide a stabilized construction entrance to prevent mud from being deposited onto adjacent roads.
- The contractor shall be responsible for obtaining all required permits, paying all fees, and otherwise complying with all applicable regulations governing the project.
- The contractor shall protect from damage or injury all property including survey monuments, property markers, benchmarks, etc. Items damaged shall be reset by a professional land surveyor licensed in the state of Missouri, at the contractor's expense.
- The contractor shall be responsible for the restoration of the right–of–way and for damaged improvements such as curbs, sidewalks, street light and traffic signal junction boxes, traffic signal loop lead–ins, signal poles, etc. Damaged improvements shall be repaired in conformance with the latest city standards and to the city's satisfaction.
- The contractor shall sod all disturbed areas within the public street right–of–way.
- Paving shall conform to the soils report, and these drawings, any identified discrepancies shall be brought to the attention of the engineer.
- Contractor shall provide 48–hour notification to the city engineering division to schedule all required inspections.
- All concrete for public improvements shall comply with the Standards and Specifications of the Kansas City Metropolitan Materials Board (KCMMB). Structural concrete shall be 5,000 psi and nonstructural concrete shall be 4,000 psi.
- A right–of–way work permit and/or street excavations permit shall be obtained by the contractor to complete all utility work within the public street right–of–way.

Americans with Disabilities Act (ADA) Notes:

- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.

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STATE OF MISSOURI SKYLER LEE MARTIN NUMBER PE-2018021273 PROFESSIONAL ENGINEER
02/16/2021

Notes & Detail Center

A New Facility for
Automotive Sales
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date 02.21.2020
drawn by SLM
checked by PAM
revisions
02.16.2021 FDP

sheet number
C1.2
drawing type fdp
project number 19076

Local Benchmarks:

BM–#

BM–1: Storm Structure, Manhole Cover
Elevation: 982.05'
N: 1013823.1378
E: 2827361.8656

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

Property Legend

- right of way
- property lines
- easements
- setbacks

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
- proposed major contour

Utility Legend

- existing
- proposed

Linetypes

- sonm — sanitary main
- sans — sanitary service
- storm sewer (existing)
- storm sewer (solid wall, proposed)
- stm — storm sewer (solid wall, proposed)
- storm sewer (perforated, proposed)
- wtrm — water main
- wtrf — water service (fire)
- wtrd — water service (domestic)
- wtri — water service (irrigation)
- gasm — natural gas main
- gass — gass — natural gas service schematic
- elpu — underground primary electric
- elsu — underground secondary electric
- elpo — overhead electric
- datu — underground cable/phone/data
- datsu — underground cable/phone/data service
- fence–chainlink
- fence–wood
- fence–barbed wire
- treeline

Symbols

- (S) sanitary manhole
- co service cleanout
- mv force main release valve
- rectangular structure
- circular structure
- fire hydrant
- wv water valve
- (M) water meter
- BFP backflow preventer
- natural gas meter
- T service transformer (pad mount)
- S primary switch gear
- light pole
- C cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

Utility Contacts

Sanitary – City of Lee's Summit – phone (816) 969–1900
Water – City of Lee's Summit – phone (816) 969–1900
Electric – Evergy – phone (888) 471–5275
Gas – Spire – phone (816) 756–5252
Telephone – At&T – phone (800) 464–7928
Cable – Spectrum – phone (816) 358–8833
Storm Sewer – City of Lee's Summit – phone (816) 969–1800

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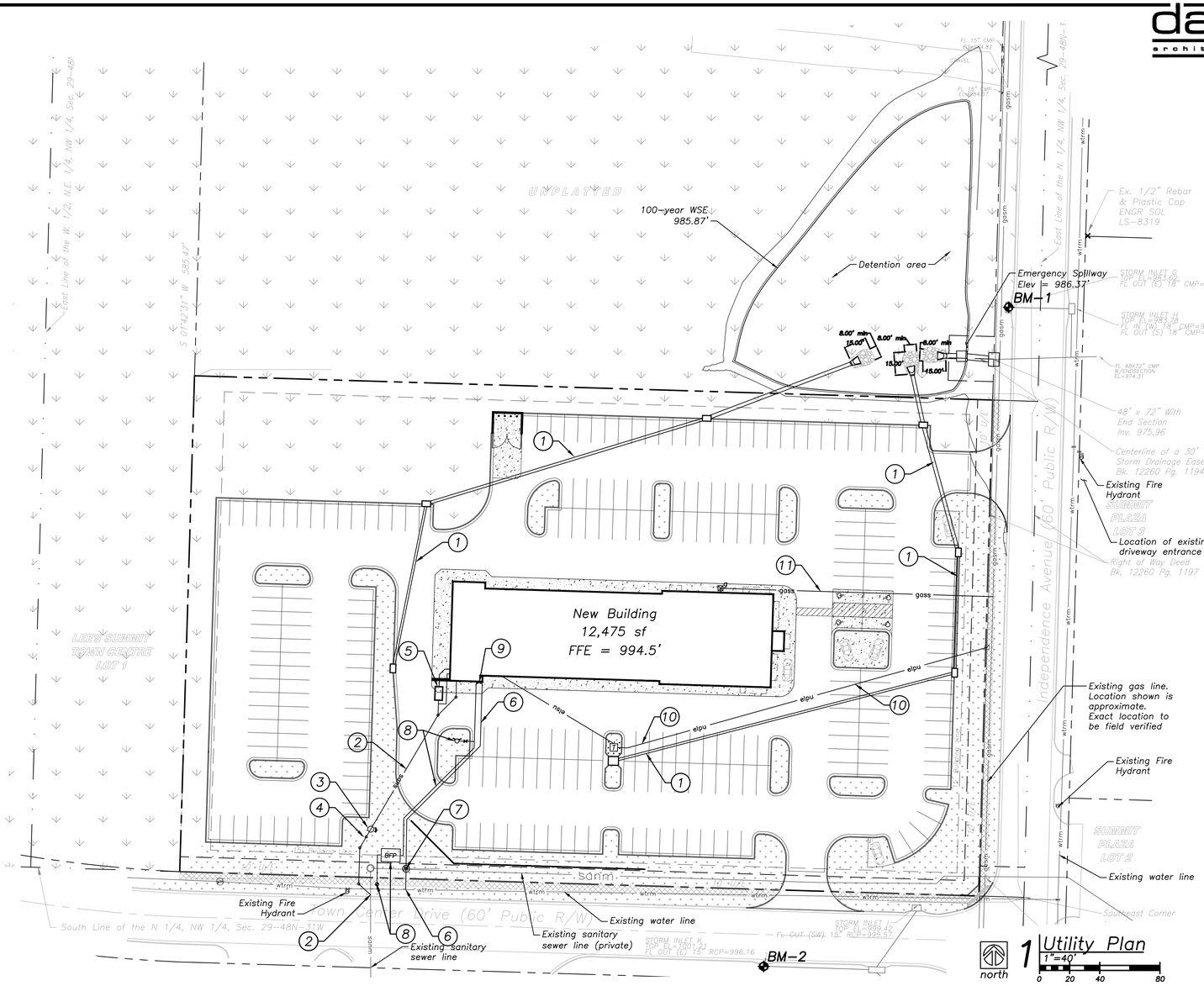
Field Survey identified no evidence suggesting presence of any active, inactive or capped oil and/or gas wells on the property

Floodplain Note:

The site lies entirely within 'Zone X', areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Fire Protection Notes:

a. Plans and specifications, in accordance with NFPA 24, for the private fire line shall be submitted for review and approval prior to installation.
b. Underground fire line installation including thrust blocks shall be inspected prior to being backfilled.
c. Hydrostatic testing and flushes shall be completed with the fire department as a witness



Utility Notes:

1. Proposed storm sewer see sheet C3.3 for detail (private).

2. Proposed sanitary sewer service
   - Install approx. 116 L.F. 4" PVC SDR–26 from service connection to grinder pump at 2% minimum slope
     F/L at Bldg = 991.00'
   - Install approx. 49 L.F. 1.25" PVC SDR–11 sanitary sewer service pipe with (2) 45° horiz. and sampling cleanout, from grinder pump to existing public gravity sanitary sewer main.
     F/L at Pump = 988.68'
     F/L at public gravity main connection = ~999.32' to be field verified by Contractor.

3. Install E–ONE W Series 48" fiberglass Triplex grinder pump station per manufacturer standards. Install associated uni–strut mounted alarm/disconnect panel adjacent to pump station.
   - Top Elev. = 1001.86'
   - Invert Elev. = 988.68'

4. Install E–ONE Uni–Lateral stainless steel lateral valve on 1.25" force service line per manufacturer standards with heavy duty traffic rated removable cover.

5. Proposed grease/oil interceptor. Install 1,000 gallon precast grease interceptor, with traffic rated line, that meets the requirements set by the City of Lee's Summit Public Works Department. Install approx. 16 L.F. 4" PVC SDR–26 at 2.0% min., from building to grease interceptor. From interceptor, install approx. 10 L.F. 4" PVC SDR–26 at 2.0% min. to WYE on primary waste service line. Install 2" PVC vent pipe from sampling cleanout back to building, see MEP plans for continuation.
   - F/L at Bldg = 991.50'
   - F/L at GI (In) = 991.18
   - F/L at GI (Out) = 991.00

Utility Notes:

6. Coordinate with City of Lee's Summit 2" domestic service taps using corporation stop to connect to existing main, by City.
   - Service line from water main shall be 2" Type K soft copper (ASTM B 88) from water main to a distance of 10' beyond the proposed water meter.
   - Install 2" PVC pipe from a distance of 10' beyond the proposed water meter to service connection at building.
   - Re: MEP Plans for continuation at building.

7. Install 1–1/2" water meter as shown in meter pit with gravel bottom for drainage. (private).

8. Install approx. 160 L.F. of 6" C900 private fireline. Connect with 12"x6" TEE and restrained gate valve
   - (1) TEE fitting and (1) fire hydrant & valve assemblies. Thrust blocks to be installed on all fittings
   - Exterior double check detector backflow prevention device to be installed in vault with gravel bottom for drainage
   - Re: MEP Plans for continuation at building.

9. Connect to 6"x6" Tee on private fire line and install approx. 6' C900 fire protection to building
   - Install Fire Department Connection (FDC) on building at this location
   - Re: MEP Plans for continuation at building.

10. Proposed electrical service. Install approx. 310 L.F. of primary conduit from existing line to transformer pad and 87 L.F. of secondary conduit from transformer to building as shown, per City Standards. Contractor to coordinate with Evergy for electrical service.

11. Proposed natural gas service. Contractor to coordinate with Spire for gas service. Contractor to field verify location of gas main, location shown is approximate.

12. Coordinate telephone and data service with Utility.

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STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021273
PROFESSIONAL ENGINEER
02/16/2021

Utilities & Detail Center

A New Facility for
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sheet number
C1.3
drawing type
fdp
project number
19076

Local Benchmarks: BM–#

BM–1: Storm Structure, Manhole Cover
Elevation: 982.05'
N: 1013823.1378
E: 2827361.8656

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
- proposed major contour

Utility Legend

- existing
- proposed

Property Legend

- right of way
- property lines
- easements
- setbacks

Linetypes

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- datsu — underground cable/phone/data service
- fence–chainlink
- fence–wood
- fence–barbed wire
- treeline

Symbols

- sanitary manhole
- co — service cleanout
- frmv — force main release valve
- rectangular structure
- circular structure
- fire hydrant
- wv — water valve
- water meter
- BFP — backflow preventer
- natural gas meter
- T — service transformer (pad mount)
- S — primary switch gear
- light pole
- C — cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

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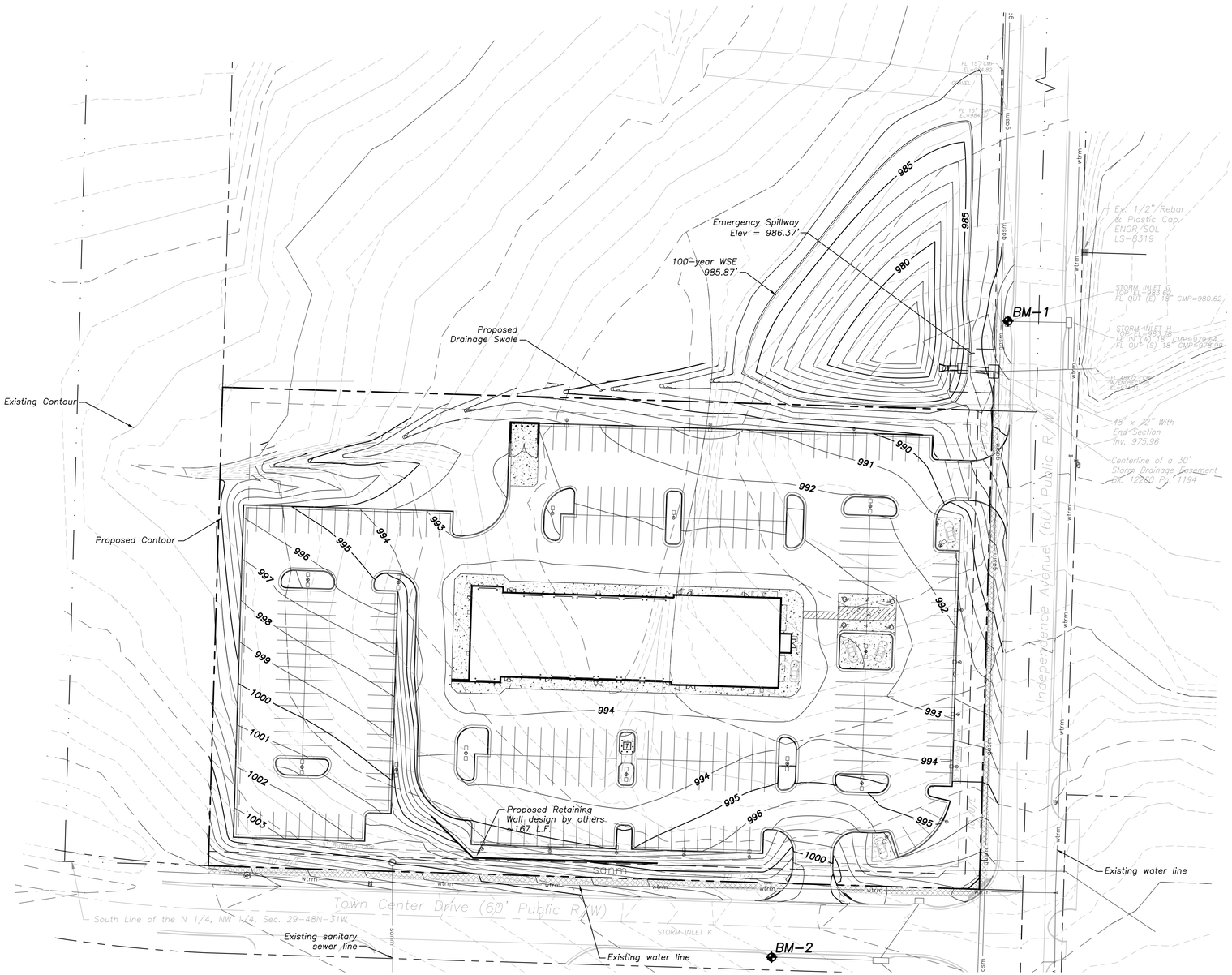

north

1 Grading Plan
1"=40'
0 20 40 80

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SKYLER LEE MARTIN
NUMBER PE-2018021223
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02/16/2021

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drawing type
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project number
19076

Local Benchmarks: BM–#

BM–1: Storm Structure, Manhole Cover
Elevation: 983.62'
N: 1013823.1758
E: 2827361.8695

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

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Utility Legend

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Symbols

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MISSOURI ONE CALL SYSTEM, INC. 800-344-7483 STOP CALL BEFORE YOU DIG

Erosion Control Legend

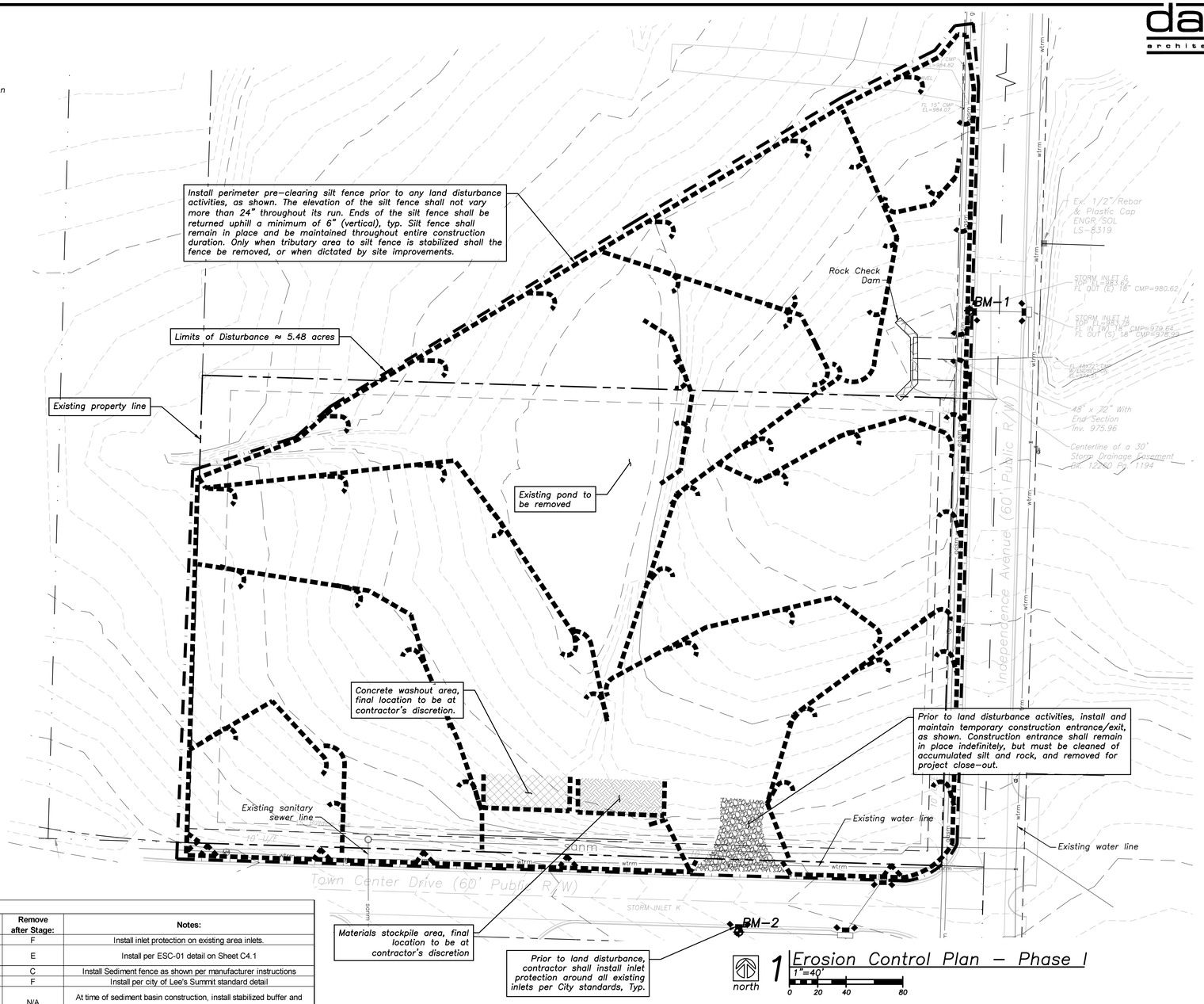
- Phase I Silt fence
- Phase I Inlet protection
- limits of disturbance
- construction entrance
- topsoil stockpile area
- concrete washout area

Property Legend

- right of way
- property lines
- easements
- setbacks

Note:

Contractor to construct stormwater management facilities, specifically those features related to detention, prior to any land disturbance of the site and prior to the construction of any other site development work as not to effect downstream neighbors with undetained stormwater discharge.



Erosion and Sediment Control Staging Chart

	Project Stage	Description	Remove after Stage:	Notes:
Phase I	A - Prior to Land Disturbance	Inlet Protection	F	Install inlet protection on existing area inlets.
		Temporary Construction Entrance and Staging Area	E	Install per ESC-01 detail on Sheet C4.1
		Phase I Sediment Fence	C	Install Sediment fence as shown per manufacturer instructions
		Perimeter Sediment Fence	F	Install per city of Lee's Summit standard detail
Phase II	B - Construct Sediment Basin	Phase II area Storm Pipe Inlet & Outlet Protection within Proposed Sediment Basin	N/A	At time of sediment basin construction, install stabilized buffer and utilize skimmer at sediment basin outlet structure.
	C - Mass Grading	Concrete Washout	E	Remove only when graded areas have permanent stabilization established.
		Stockpile Topsoil	E	Install sediment fence a minimum of 5' beyond toe of slope for all stockpile areas.
		Phase II Sediment Fence	F	Install as needed for intermediate sediment control during mass grading
		Remove Existing Pond	N/A	Reference Soil Stabilization notes on Sheet C2.2 for recommended stabilization procedures
	D - Storm Sewer Installation	Phase II Area and Curb Inlets Protection	F	Install sediment fence around all area inlets and open junction boxes. Install excavated area and throat protection on all curb inlets.
		Temporary Stabilization	N/A	Seed and mulch future development area. Temporarily stabilize with hydromulch if out of seeding season.
Building Phase	E - Construction of Detention Pond, Building, and Pavements	Convert Sediment Basin to Detention Pond	N/A	Install inlet/outlet storm structures. Grade Detention Area per Construction Drawings.
		Phase II Area and Curb Inlets Protection	F	Following installation of storm structures and curb and gutter, install inlet filter bag
		Sediment Log/Wattle	F	To be placed at back of curb and installed per manufacturer instructions.
	F - Final Grading & Stabilization	Establish Perennial Vegetation and landscaping per landscape plan. Install Native Vegetation in designated areas using approved seed mix.	N/A	Redistribute topsoil and seed and mulch all disturbed areas. Sod right-of-way. Stabilization complete when 100% of disturbed area is established with perennial vegetation with a density of 70%. All plantings shall be during approved planting season. Planting shall be per approved landscape plan.

Soil Stabilization:

In the event moisture sensitive soils are observed, PSI recommends the following procedures be considered to further stabilize wet/soft areas if typical moisture conditioning/disking/recompacting methods are not affective

1. *Scarify, dry, and recompact the soils to a moisture content that will facilitate compaction in accordance with the structural fill requirements of the geotechnical report "03382128 – Proposed Detail Center".*
2. *If scarifying, drying and recompaction of the soils does not stabilize the soils, removing and replacement with new structural fill or treating the soils wit class "C" fly ash, portland cement or lime–treatment of the clay soils may need to be performed. The amount of these materials will likely range between 10 to 15 percent by weight for fly ash, 5 to 8 percent by weight for portland cement and 4 to 8 percent for lime.*
3. *Track 3 to 5–inch minimum well–graded crushed limestone or similar material into the failing areas to attempt to bridge the soft zones. These materials should be placed in loose lifts of no more than 10 inches and tacked in with a loaded rubber tire truck or beat in with a backhoe bucket. Once the areas are stabilized, onsite soils can then be placed to the recommended low volume change material subgrade elevations for pavements. If for some reason areas do not stabilize with 1 to 2 lifts of stone, a later of grid or fabric may need to be incorporated into those areas at that time, followed by additional lifts of stone consisting of ¾" minus material (AB–3).*
4. *A fourth option would be to place a geo–grid similar to Tensar BX1100 and then place new granular fill similar to ¾" minus material in compacted lifts. The grid should extend at least 10 feet past the perimeter of the failing areas and should be overlapped according to the manufacturers requirements. If the area does not stabilize by the second lift of ¾" minus material an additional later of grid should then be placed and the process should be repeated until it is stabilized.*

PSI recommends a test section be performed to verify the selected remediation method.

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STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2010021223
PROFESSIONAL ENGINEER
02/16/2021

Automotive Sales & Detail Center

A New Facility for

2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.21.2020
drawn by
SLM
checked by
PAM
revisions
02.16.2021 FDP

sheet number
C2.2
drawing type
fdp
project number
19076

Local Benchmarks: BM–#

BM–1: Storm Structure, Manhole Cover
Elevation: 983.62'
N: 1013823.1758
E: 2827361.8695

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
- proposed major contour

Utility Legend

- existing
- proposed

Linetypes

- sanm — sanitary main
- sans — sanitary service
- storm sewer (existing)
- storm sewer (solid wall, proposed)
- stm — storm sewer (solid wall, proposed)
- storm sewer (perforated, proposed)
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- wtrd — water service (domestic)
- wtri — water service (irrigation)
- gasm — natural gas main
- gass — natural gas service schematic
- elpu — underground primary electric
- elsu — underground secondary electric
- elpo — overhead electric
- datu — underground cable/phone/data
- datsu — underground cable/phone/data service
- fence–chainlink
- fence–wood
- fence–barbed wire
- treeline

Symbols

- sanitary manhole
- co — service cleanout
- fmv — force main release valve
- rectangular structure
- circular structure
- fire hydrant
- wv — water valve
- water meter
- BFP — backflow preventer
- natural gas meter
- T — service transformer (pad mount)
- S — primary switch gear
- light pole
- C — cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

Erosion Control Legend

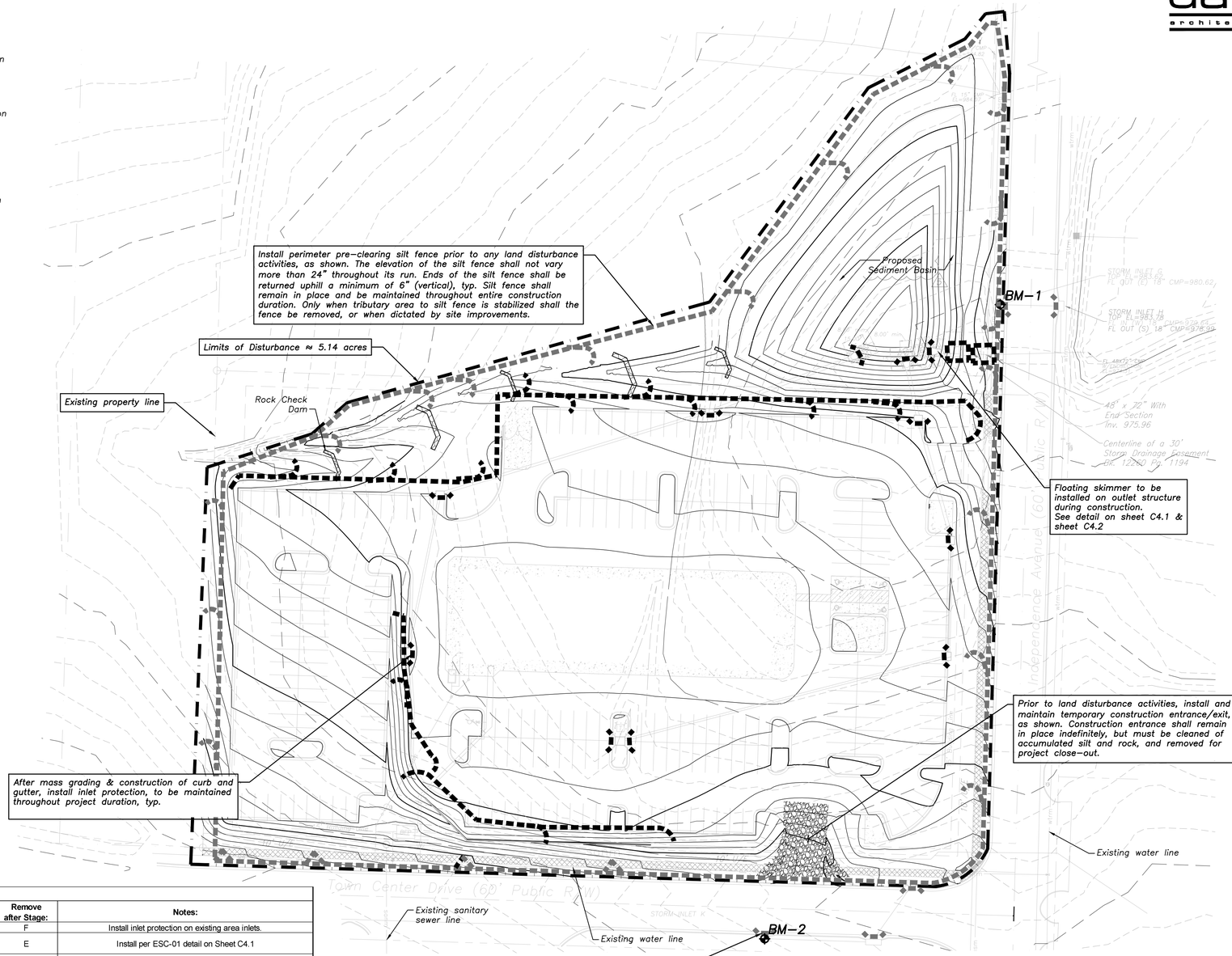
- Phase I Silt fence
- Phase I Inlet protection
- Phase II Silt fence
- Phase II Inlet protection
- limits of disturbance
- rock check dam
- seeding & stabilization

Property Legend

- right of way
- property lines
- easements
- setbacks

Note:

Contractor to construct stormwater management facilities, specifically those features related to detention, prior to any land disturbance of the site and prior to the construction of any other site development work as not to effect downstream neighbors with undetained stormwater discharge.



north

1 Erosion Control Plan – Phase II
1"=40'
0 20 40 80

Erosion and Sediment Control Staging Chart

	Project Stage	Description	Remove after Stage:	Notes:
Phase I	A - Prior to Land Disturbance	Inlet Protection	F	Install inlet protection on existing area inlets.
		Temporary Construction Entrance and Staging Area	E	Install per ESC-01 detail on Sheet C4.1
		Phase I Sediment Fence	C	Install Sediment fence as shown per manufacturer instructions
		Perimeter Sediment Fence	F	Install per city of Lee's Summit standard detail
Phase II	B - Construct Sediment Basin	Phase II area Storm Pipe Inlet & Outlet Protection within Proposed Sediment Basin	N/A	At time of sediment basin construction, install stabilized buffer and utilize skimmer at sediment basin outlet structure.
	C - Mass Grading	Concrete Washout	E	Remove only when graded areas have permanent stabilization established.
		Stockpile Topsoil	E	Install sediment fence a minimum of 5' beyond toe of slope for all stockpile areas.
		Phase II Sediment Fence	F	Install as needed for intermediate sediment control during mass grading
		Remove Existing Pond	N/A	Reference Soil Stabilization notes on Sheet C2.2 for recommended stabilization procedures
	D - Storm Sewer Installation	Phase II Area and Curb Inlets Protection	F	Install sediment fence around all area inlets and open junction boxes. Install excavated area and throat protection on all curb inlets.
		Temporary Stabilization	N/A	Seed and mulch future development area. Temporarily stabilize with hydromulch if out of seeding season.
Building Phase	E - Construction of Detention Pond, Building, and Pavements	Convert Sediment Basin to Detention Pond	N/A	Install inlet/outlet storm structures. Grade Detention Area per Construction Drawings.
		Phase II Area and Curb Inlets Protection	F	Following installation of storm structures and curb and gutter, install inlet filter bag.
		Sediment Log/Wattle	F	To be placed at back of curb and installed per manufacturer instructions.
	F - Final Grading & Stabilization	Establish Perennial Vegetation and landscaping per landscape plan. Install Native Vegetation in designated areas using approved seed mix.	N/A	Redistribute topsoil and seed and mulch all disturbed areas. Sod right-of-way. Stabilization complete when 100% of disturbed area is established with perennial vegetation with a density of 70%. All plantings shall be during approved planting season. Planting shall be per approved landscape plan.

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PROFESSIONAL ENGINEER
02/16/2021

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sheet number
C2.3
drawing type
fdp
project number
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BM–#

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N: 1013823.1378
E: 2827361.8656

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

Grading Legend

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- proposed minor contour
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Utility Legend

- existing
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Property Legend

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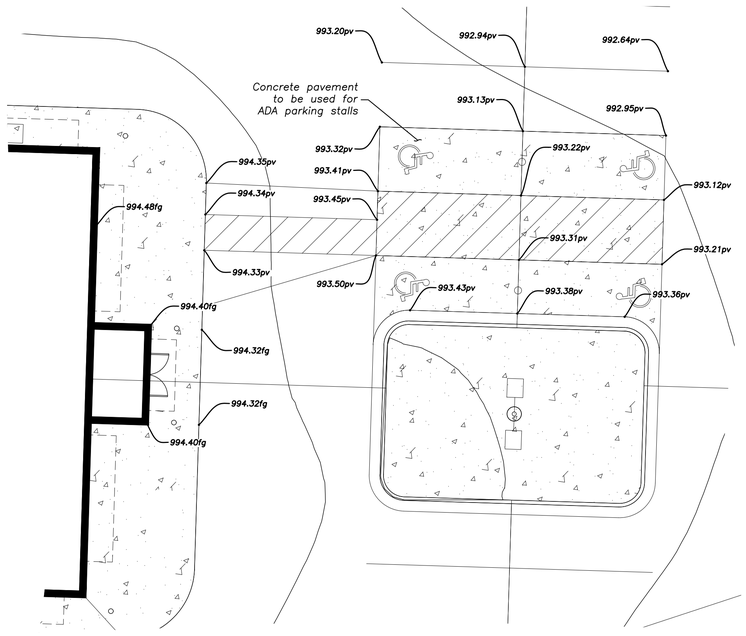
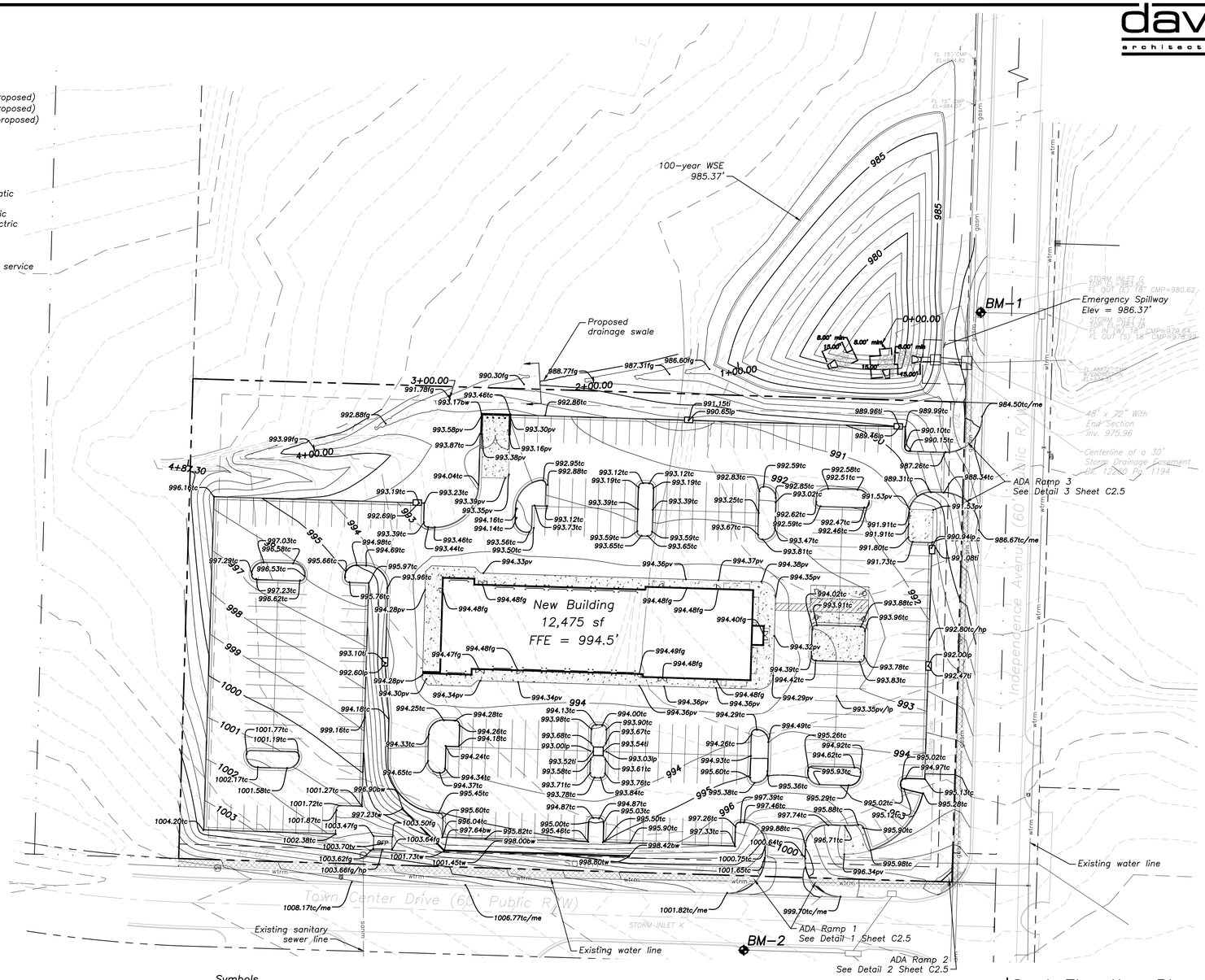
datu	undgrnd cable/phone/data
datsu	undgrnd cable/phone/data service
	fence–chainlink
	fence–wood
	fence–barbed wire
	treeline

Americans with Disabilities Act (ADA) Notes:

- The running and cross slopes for all sidewalks, accessible paths, ramps, designated parking stalls, etc., shall be in compliance with latest Federal ADA guidelines, in addition to any accessibility standards adopted by the governing municipality. Prior to installation/construction, if any discrepancies are found within the plans, the Engineer shall be notified.



north **2** ADA Spot Elevation Plan
1"=10'
0 5 10 20



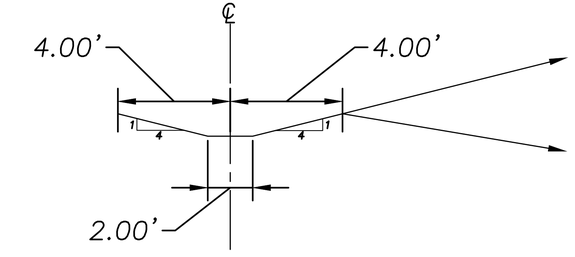
north **1** Spot Elevation Plan
1"=40'
0 20 40 80

Symbols

S	sanitary manhole	g	natural gas meter
co	service cleanout	T	service transformer (pad mount)
fmv	force main release valve	S	primary switch gear
	rectangular structure		light pole
	circular structure	C	cable/phone/data junction box
	fire hydrant		street light
wv	water valve		pedestrian street light
M	water meter		electric pole
BFP	backflow preventer		guy wire
			end section

Spot Elevation Legend

br	=	bottom of ramp	ti	=	top of inlet
tr	=	top of ramp	tv	=	top of vault
me	=	match existing	hp	=	high–point
pv	=	pavement	lp	=	low–point
bw	=	bottom of wall	bldg	=	building
tw	=	top of wall	FFE	=	finished floor elevation
tc	=	top of curb	ex	=	existing
sw	=	sidewalk	mp	=	match pavement
			fg	=	finished grade



3 Drainage Swale Cross–Section
not to scale

Flat Cut Slope: 4.00:1
Flat Cut Max Height: 1.00'
Medium Cut Slope: 4.00:1
Medium Cut Max Height: 5.00'
Steep Cut Slope: 3.00:1

Flat Fill Slope: 6.00:1
Flat Fill Max Height: 5.00'
Medium Fill Slope: 4.00:1
Medium Fill Max Height: 10.00'
Steep Fill Slope: 3.00:1

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Local Benchmarks: BM–#

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E: 2827361.8656

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- proposed major contour

Utility Legend

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- easements
- setbacks

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Spot Elevation Legend

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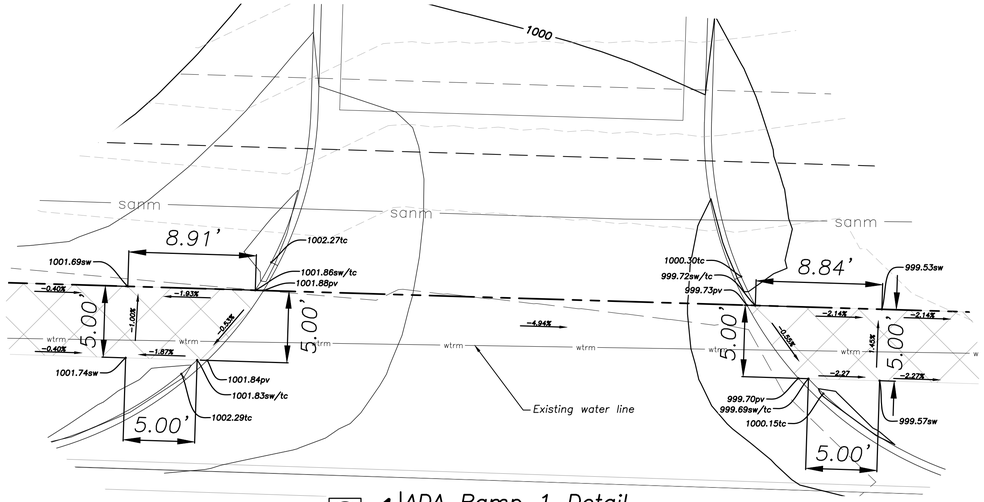
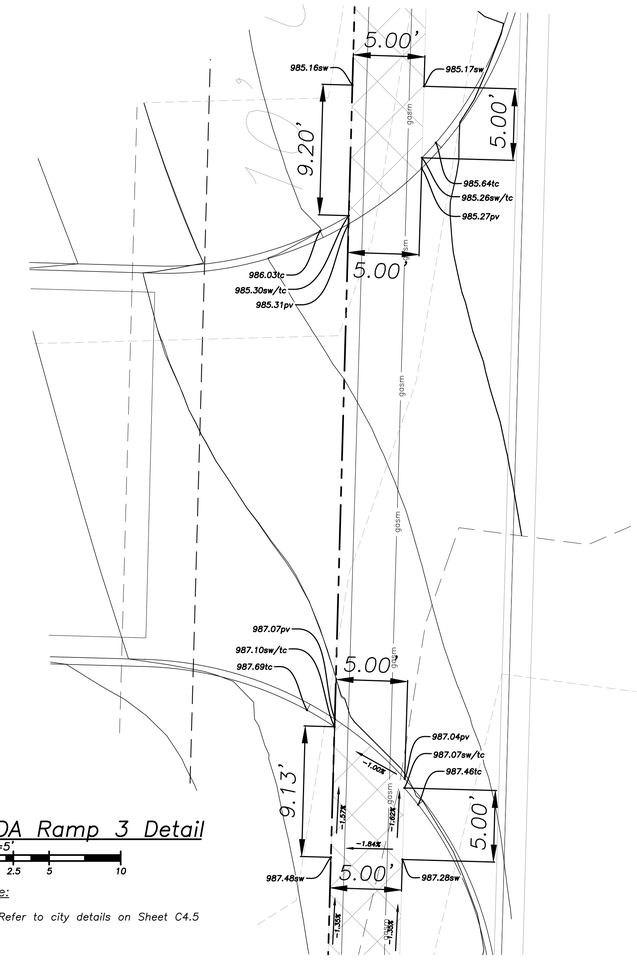


north **1 ADA Ramp 1 Detail**
1"=5'
0 2.5 5 10

Note:

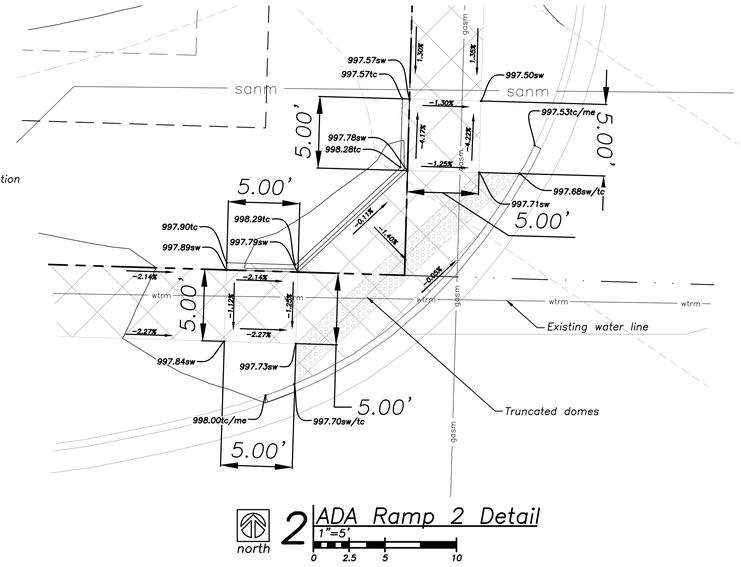
- Refer to city details on Sheet C4.5



north **3 ADA Ramp 3 Detail**
1"=5'
0 2.5 5 10

Note:

- Refer to city details on Sheet C4.5



north **2 ADA Ramp 2 Detail**
1"=5'
0 2.5 5 10

Note:

- Refer to city details on Sheet C4.5

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STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021223
PROFESSIONAL ENGINEER
02/16/2021

Automotive Sales & Detail Center

A New Facility for

2100 NE Independence Ave
Lee's Summit, Missouri 64064

date 02.21.2020
drawn by SLM
checked by PAM
revisions
02.16.2021 FDP

sheet number **C2.5**
drawing type fdp
project number 19076

Local Benchmarks: BM–#

BM–1: Storm Structure, Manhole Cover
Elevation: 982.05'
N: 1013823.1378
E: 2827361.8656

BM–2: Storm Structure, Manhole Cover
Elevation: 1001.21'
N: 1013384.7454
E: 2827199.0101

Floodplain Note:

The site lies entirely within 'Zone X', areas determined to be outside the 0.2% annual chance floodplain as depicted on the FEMA Flood Insurance Rate Map (FIRM) no. 29095C0430G, Revision Date: January 20, 2017.

Drainage Legend

- drainage area
- existing flow direction

Property Legend

- right of way
- property lines
- easements
- setbacks

Grading Legend

- existing minor contour
- existing major contour
- proposed minor contour
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Utility Legend

- existing
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Linetypes

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	fence–chainlink
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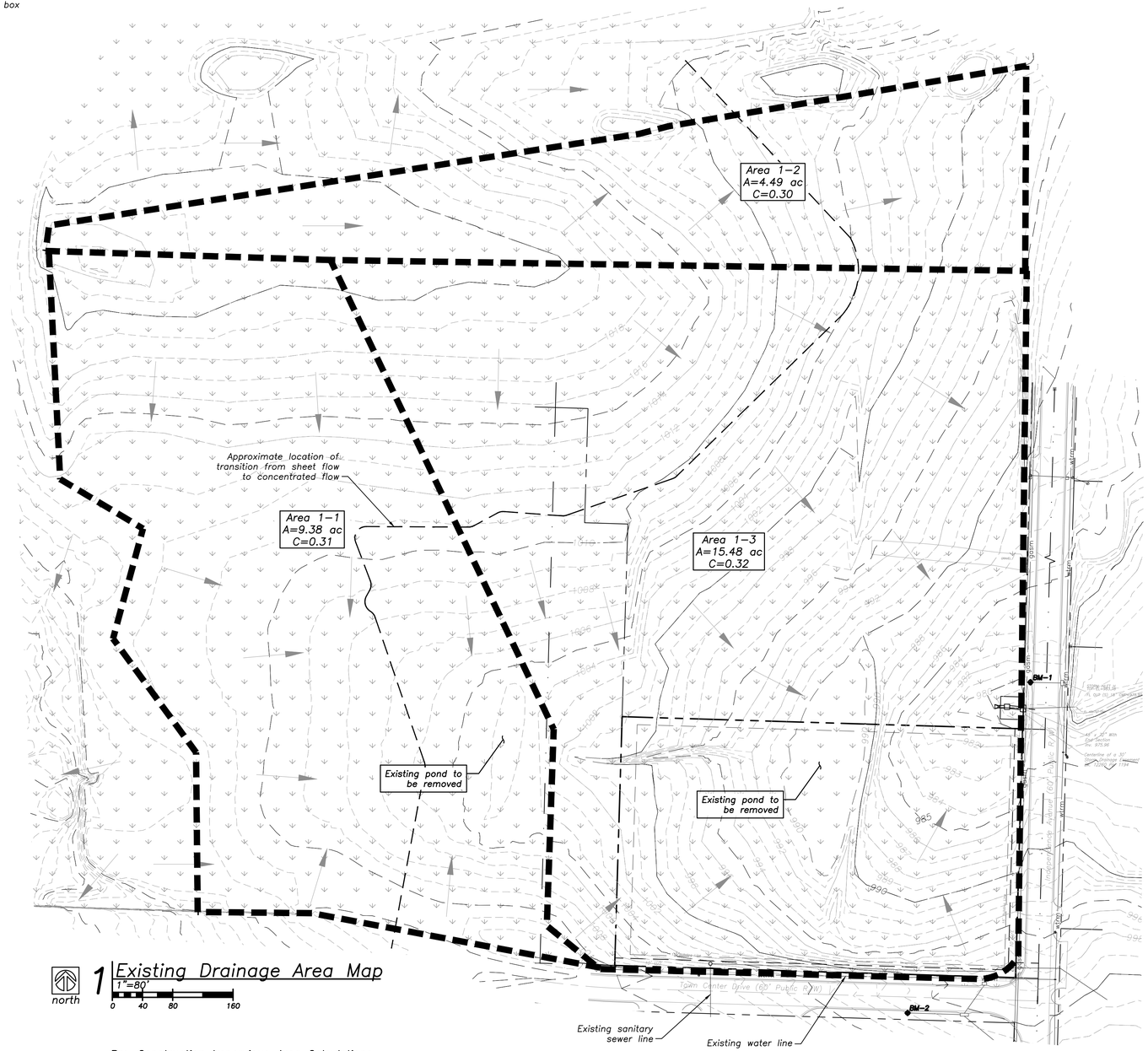
Symbol Legend

- sanitary manhole
- service cleanout
- force main release valve
- rectangular structure
- circular structure
- fire hydrant
- water valve
- water meter
- backflow preventer
- natural gas meter
- service transformer (pad mount)
- primary switch gear
- light pole
- cable/phone/data junction box
- street light
- pedestrian street light
- electric pole
- guy wire
- end section

north

2 Vicinity Map
No Scale



north

1 Existing Drainage Area Map
1"=80'
0 40 80 160

Pre–Construction Impervious Area Calculations

	Square Feet	Acres
Area of Site	1,252,503	28.75
Impervious Area	25,983	0.60
Pervious Area	1,278,486	29.35

Q: 2 year	34.18	cfs
10 year	47.72	cfs
100 year	71.89	cfs

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Elevation: 1001.21'
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Drainage Legend

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Property Legend

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Utility Legend

- existing
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Symbol Legend

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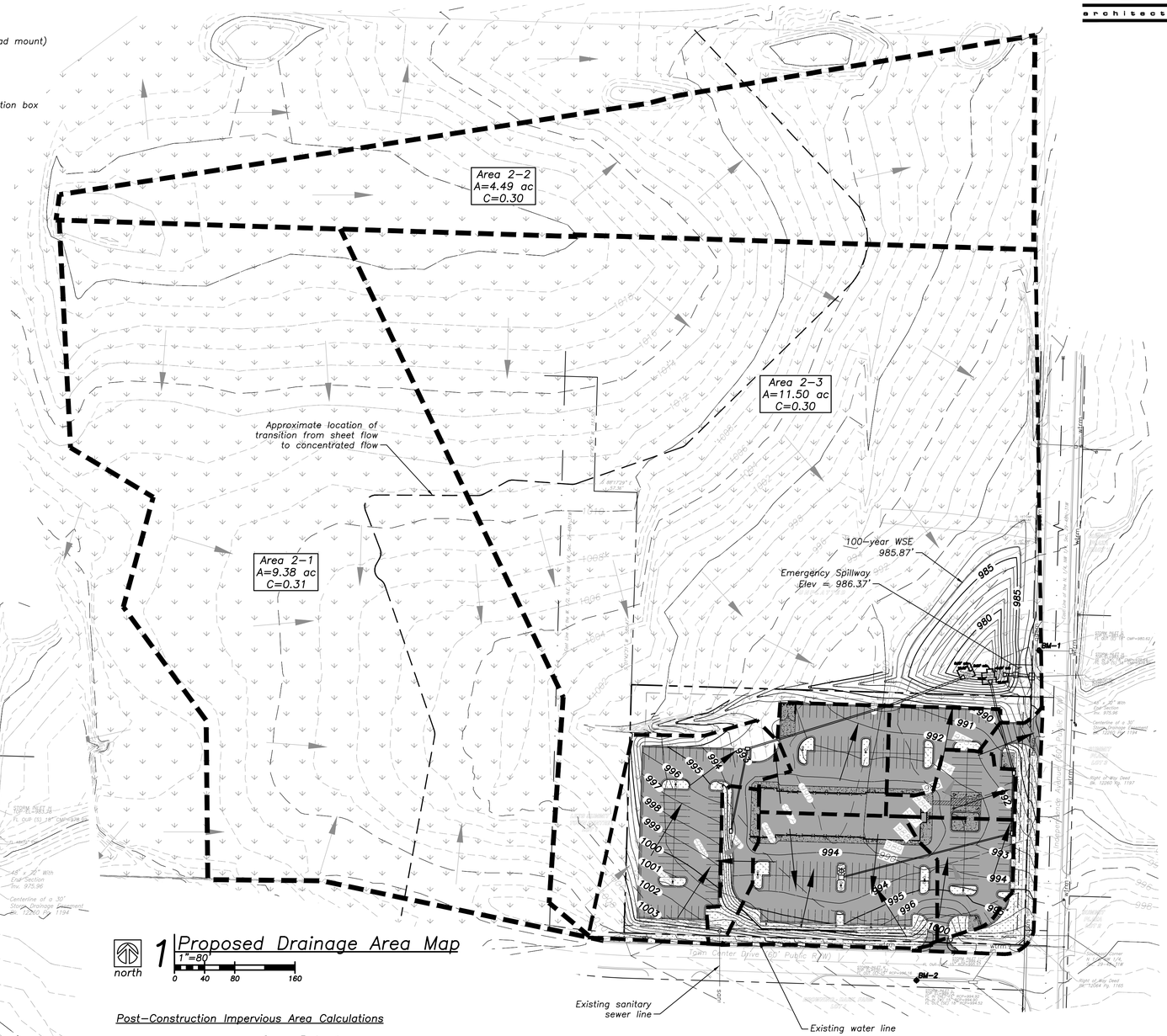

north 1 **Proposed Drainage Area Map**
1"=80'
0 40 80 160

north 2 **Proposed Drainage Area Map Detail**
1"=60'
0 30 60 120

Post–Construction Impervious Area Calculations

	Square Feet	Acres
Area of Site	1,278,486	29.35
Impervious Area	125,453	2.88
Pervious Area	1,153,033	26.47

Q: 2 year 1.81 cfs
10 year 9.18 cfs
100 year 24.56 cfs

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drawing type fdp
project number 19076

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Proposed Pipe and Structures
Existing Pipe and Structures
Compacted Fill

Note:

Compacted fill shall be placed to a minimum 18" above the top of the pipe prior to installation.

Property Legend

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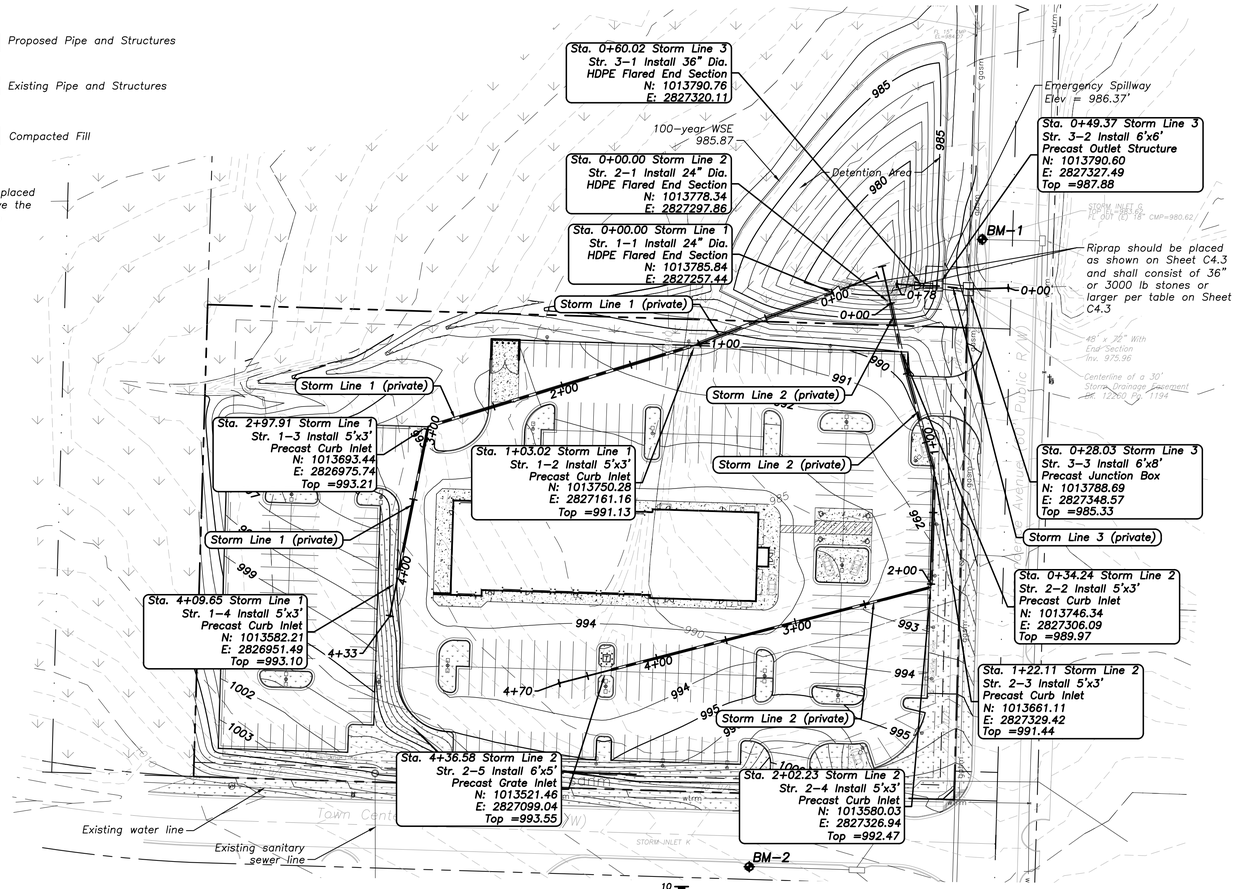
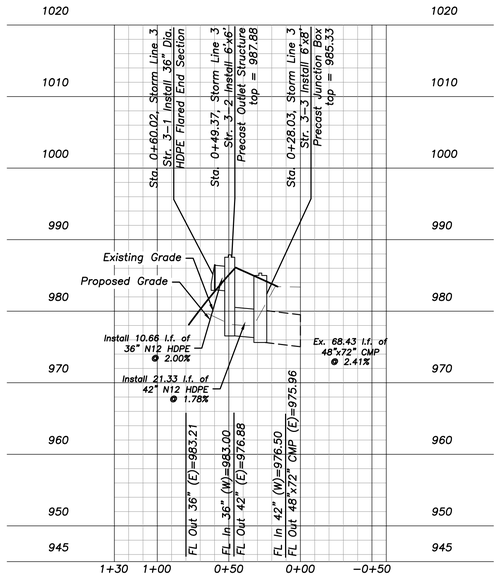


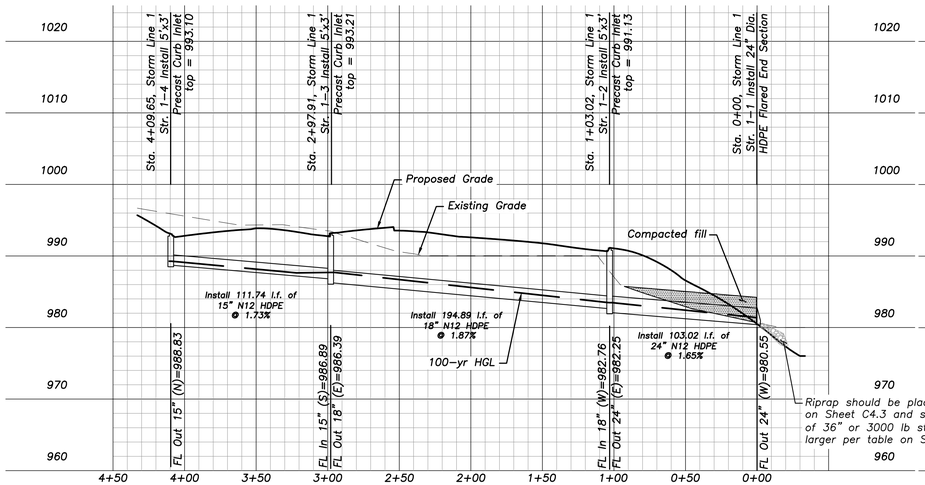
Storm Line 3



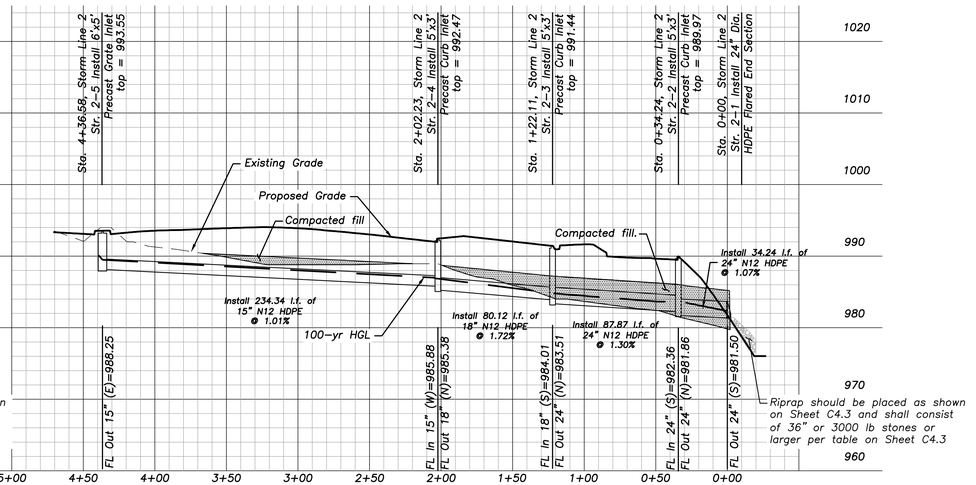
Storm Plan and Profile

V: 1"=10' H: 1"=50'
0 25 50 100

Storm Line 1



Storm Line 2



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sheet number
C3.3
drawing type
fdp
project number
19076

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Storm Line 1
Pipe Calculations

10-year Rain Event																			
Pipe Segment	DrainageArea (ac)	RunoffCoeff (C)	TotalCxA	iSys (in/hr)	TotalRunoff (cfs)	LineSize (in)	LineSlope (%)	n-valuePipe	CapacityFull (cfs)	DepthDn (ft)	DepthUp (ft)	HGLDn (ft)	HGLUp (ft)	VelAve (ft/s)	EGLDn (ft)	EGLUp (ft)	EnergyLoss (ft)	LineLength (ft)	PipeTravel (min)	Rim-Hw (ft)
1-1 to 1-2	0.50	0.88	1.25	6.86	8.57	24	1.66	0.012	31.82	0.71	1.04**	981.26	983.29	6.85	981.68	983.71	0.000	102.641	0.25	7.75
1-2 to 1-3	1.05	0.65	0.81	6.99	5.65	18	2.00	0.012	16.24	0.61	0.92**	983.37	987.55	6.64	983.76	987.93	0.000	193.926	0.49	5.69
1-3 to 1-4	0.20	0.63	0.13	7.24	0.91	15	1.70	0.012	9.10	0.66	0.37**	987.55	989.20 j	2.18	987.68	989.34	0.000	113.844	0.87	4.27
100-year Rain Event																			
Pipe Segment	DrainageArea (ac)	RunoffCoeff (C)	TotalCxA	iSys (in/hr)	TotalRunoff (cfs)	LineSize (in)	LineSlope (%)	n-valuePipe	CapacityFull (cfs)	DepthDn (ft)	DepthUp (ft)	HGLDn (ft)	HGLUp (ft)	VelAve (ft/s)	EGLDn (ft)	EGLUp (ft)	EnergyLoss (ft)	LineLength (ft)	PipeTravel (min)	Rim-Hw (ft)
1-1 to 1-2	0.50	0.88	1.25	9.41	11.75	24	1.66	0.012	31.82	0.84	1.23**	981.39	983.48	7.54	981.92	984.00	0.000	102.641	0.23	7.56
1-2 to 1-3	1.05	0.65	0.81	9.56	7.73	18	2.00	0.012	16.24	0.73	1.07**	983.49	987.70	7.34	983.99	988.21	0.000	193.926	0.44	5.54
1-3 to 1-4	0.20	0.63	0.13	9.83	1.24	15	1.70	0.012	9.10	0.81	0.44**	987.70	989.27 j	2.34	987.87	989.43	0.000	113.844	0.81	4.20

Str. 1–2
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
4.33	4.33	4.91	100	4.91	15.95

Str. 1–3
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
6.71	6.71	6.33	100	6.21	21.87

Str. 1–4
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
1.24	1.24	2.54	100	2.54	6.09

Storm Line 2
Pipe Calculations

10-year Rain Event																			
Pipe Segment	DrainageArea (ac)	RunoffCoeff (C)	TotalCxA	iSys (in/hr)	TotalRunoff (cfs)	LineSize (in)	LineSlope (%)	n-valuePipe	CapacityFull (cfs)	DepthDn (ft)	DepthUp (ft)	HGLDn (ft)	HGLUp (ft)	VelAve (ft/s)	EGLDn (ft)	EGLUp (ft)	EnergyLoss (ft)	LineLength (ft)	PipeTravel (min)	Rim-Hw (ft)
2-1 to 2-2	0.28	0.86	1.52	6.92	10.55	24	2.30	0.012	37.50	0.73	1.16**	982.23	983.42	7.87	982.71	983.90	0.000	33.035	0.07	5.29
2-2 to 2-3	0.24	0.90	1.28	7.00	8.98	24	1.30	0.012	28.20	1.06	1.07**	983.42	984.58	5.27	983.85	985.01	0.000	88.371	0.28	6.64
2-3 to 2-4	0.37	0.85	1.07	7.05	7.52	18	2.00	0.012	16.24	0.72	1.06**	984.73	986.69	7.28	985.22	987.18	0.000	81.110	0.19	5.75
2-4 to 2-5	0.99	0.76	0.75	7.24	5.45	15	1.01	0.012	7.00	0.83	0.95**	986.71	989.20	5.90	987.17	989.66	0.000	235.304	0.67	4.32
100-year Rain Event																			
Pipe Segment	DrainageArea (ac)	RunoffCoeff (C)	TotalCxA	iSys (in/hr)	TotalRunoff (cfs)	LineSize (in)	LineSlope (%)	n-valuePipe	CapacityFull (cfs)	DepthDn (ft)	DepthUp (ft)	HGLDn (ft)	HGLUp (ft)	VelAve (ft/s)	EGLDn (ft)	EGLUp (ft)	EnergyLoss (ft)	LineLength (ft)	PipeTravel (min)	Rim-Hw (ft)
2-1 to 2-2	0.28	0.86	1.52	9.48	14.44	24	2.30	0.012	37.50	0.86	1.37**	982.36	983.63	8.69	982.98	984.24	0.000	33.035	0.06	5.08
2-2 to 2-3	0.24	0.90	1.28	9.56	12.27	24	1.30	0.012	28.20	1.27	1.26**	983.63	984.77 j	5.86	984.17	985.31	0.000	88.371	0.25	6.45
2-3 to 2-4	0.37	0.85	1.07	9.62	10.26	18	2.00	0.012	16.24	0.87	1.23**	984.88	986.86	8.11	985.55	987.53	0.000	81.110	0.17	5.58
2-4 to 2-5	0.99	0.76	0.75	9.83	7.40	15	1.01	0.012	7.00	1.10	1.24	986.98	989.49	6.25	987.63	990.06	2.427	235.304	0.63	3.46

Str. 2–2
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
2.37	2.37	3.52	100	3.52	10.18

Str. 2–3
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
2.48	2.48	3.61	100	3.61	10.54

Str. 2–4
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
3.09	3.09	4.07	100	4.07	12.44

Str. 2–5
Inlet Calculations

Q		Inlet		Gutter	
Total (cfs)	Captured (cfs)	Depth (in)	Efficiency (%)	Depth (in)	Spread (ft)
7.40	7.40	6.71	100	6.71	23.45

STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021223
PROFESSIONAL ENGINEER
02/16/2021

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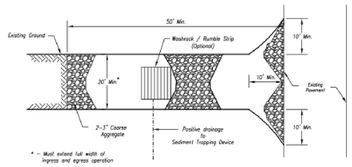
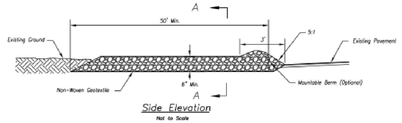
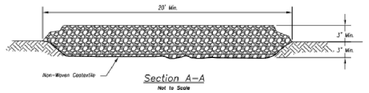


Plan View
Not to Scale



Side Elevation
Not to Scale



Section A-A
Not to Scale

Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or downhill of disturbed area.
2. Remove all vegetation and other unsuitable material from the foundation area, grade, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 3H:1V side slopes across the foundation approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and integrity of installation. Top dress with clean aggregate as needed.

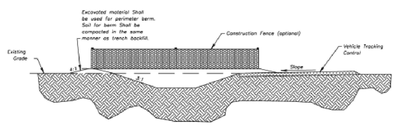
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on site.
2. Concrete washout area shall include a flat subsurface pit sized relative to the amount of concrete to be placed on site. The slopes leading out of the subsurface pit shall be 3:1. The vehicle tracking pad shall be sloped towards the concrete washout area.
3. Vehicle tracking control is required at the access point to all concrete washout areas.
4. Signs shall be placed at the construction site entrance, washout area and elsewhere as necessary to clearly indicate the location(s) of the concrete washout area(s) to operators of concrete truck and pump rigs.
5. A one-piece impervious liner may be required along the bottom and sides of the subsurface pit in sandy or gravelly soils.

Maintenance for Concrete Washout:

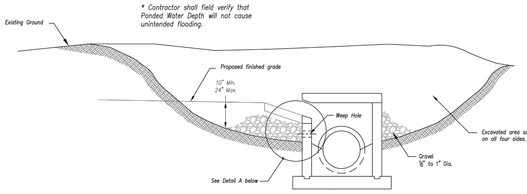
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
3. Concrete washout water, washed pieces of concrete and all other debris in the subsurface pit shall be transported from the job site in a water-tight container and disposed of properly.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas shall be stabilized.

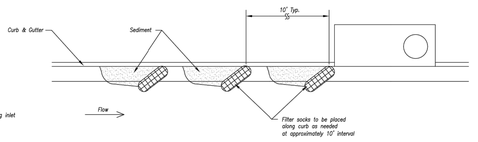


CONCRETE WASHOUT

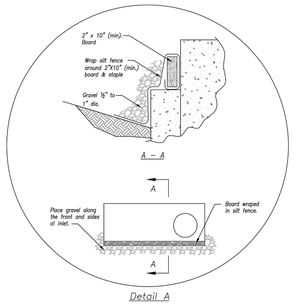
Construction Entrance modified from 2015 Overland Park Standard Details for Erosion and Sediment Control; Concrete Washout modified from 2009 City of Great Bend Standard Drawings.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT	STANDARD DRAWING NUMBER ESC-01 ADOPTED: 10/24/2016





On Grade Curb Inlet Protection



Detail A

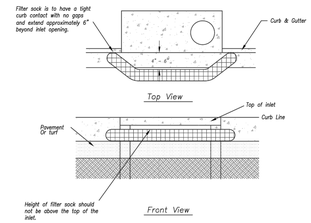
EARLY STAGE CURB INLET
(Open Box and Prior to Pouring Curb and Inlet Throat)

Notes:

1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" x 10" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When inlet is completed and curb poured, filter socks or approved equal should be used (Late Stage Curb Inlet). Straw wattles are not approved for curb inlet use.
3. Contractor to field verify ponding water shall not create a traffic hazard.

Maintenance:

1. Remove deposited sediment from excavated storage area when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

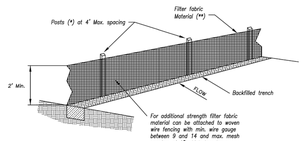


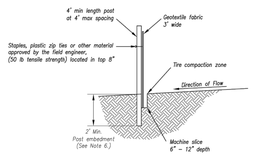
Sump Inlet Sediment Filter

LATE STAGE CURB INLET
(After Pouring Curb and Inlet Throat)

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
CURB INLET PROTECTION	STANDARD DRAWING NUMBER ESC-06 ADOPTED: 10/24/2016





(*) POSTS
- MIN. LENGTH 4'
- HARDWOOD 1 ¼" x 1 ¼"
- NO.2 SOUTHERN PINE 2 ⅛" x 2 ⅛"
- STEEL 1.33 LB/FT

(**) – Geotextile Fabric shall meet the requirements of AASHTO M288

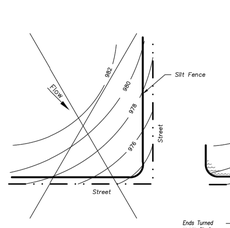
SILT FENCE DETAILS
Not to Scale

Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of silt fence.
2. Repair as necessary to maintain function and structure.



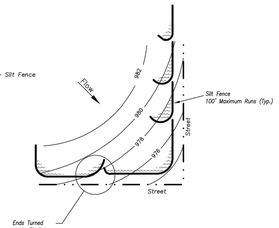
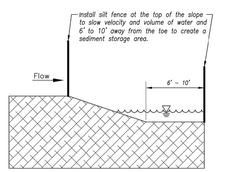
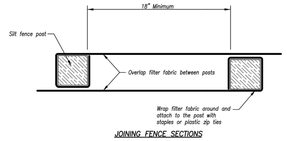


Figure A





JOINING FENCE SECTIONS
Not to Scale

SILT FENCE LAYOUT
Not to Scale

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
SILT FENCE	STANDARD DRAWING NUMBER ESC-03 ADOPTED: 10/24/2016

SKYLER LEE MARTIN
NUMBER PE-2018021223
PROFESSIONAL ENGINEER
STATE OF MISSOURI
02/16/2021

Notes & Detail Center

A New Facility for
Automotive Sales
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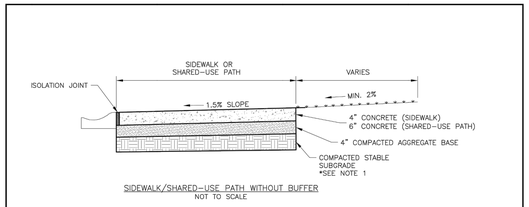
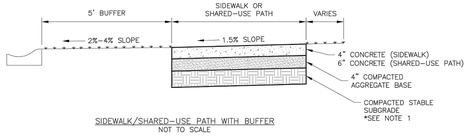


SIDEWALK/SHARED-USE PATH WITHOUT BUFFER
NOT TO SCALE

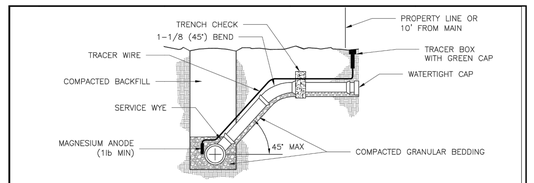


SIDEWALK/SHARED-USE PATH WITH BUFFER
NOT TO SCALE

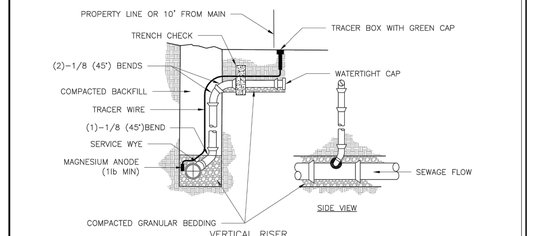
GENERAL NOTES:

1. SUBGRADE MUST BE OF STABLE, COMPACTED EARTH AND SHALL BE OVERLAYED WITH 4" COMPACTED DENSE GRADED AGGREGATE BASE.
2. 1.5% CROSS SLOPE MUST BE MAINTAINED THROUGH DRIVEWAYS.
3. KCMMB 4K CONCRETE MIX SHALL BE REQUIRED FOR ALL SIDEWALKS AND SHARED-USE PATHS OR AS APPROVED BY THE CITY INSPECTOR.
4. ALL SIDEWALKS SHALL MEET CURRENT PUBLIC RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG).
5. AN EXPANSION JOINT SHALL BE PLACED AT A MAXIMUM OF 150 FT. CONSTRUCTION JOINTS SHALL BE PLACED THE SAME WIDTH OF SIDEWALK, BUT NO GREATER THAN 10 FT.
6. SHARED-USE PATH WIDTH SHALL BE 10 FT. WIDE.
7. SIDEWALK FINISHING (NO PICTURE FRAMING) AS DIRECTED BY CITY INSPECTOR.
8. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.

LEE'S SUMMIT MISSOURI PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Date: 04/17 Drawn By: MJF Checked By: DL
SIDEWALK/SHARED-USE PATH DETAIL	GEN-2



STANDARD INSTALLATION
NOT TO SCALE

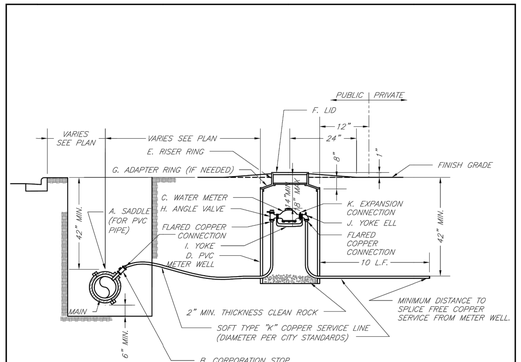


VERTICAL RISER
NOT TO SCALE

NOTES:

1. ALL SEWER STUBS SHALL BE CONSTRUCTED TO PROPERTY LINE OR 10' MINIMUM FROM THE MAIN. WHERE SIDEWALKS ARE PRESENT, CONTRACTOR SHALL EXTEND SERVICE LINE UNDER EXISTING SIDEWALK TO TWO FEET BEYOND.
2. ALL NEW CONSTRUCTION OFF SEWER STUBS SHALL BE TEMPORARILY MARKED WITH A MARKING STAKE, 36" ABOVE GROUND AND PAINTED GREEN.
3. IMPERVIOUS TRENCH CHECKS SHALL BE PLACED ON BUILDING SEWER STUBS (AT LEAST 5' AWAY FROM THE SANITARY SEWER MAIN).
4. TRENCH CHECKS ON THE BUILDING SEWER STUBS SHALL EXTEND 6" BELOW THE BOTTOM OF THE PIPE. LENGTH SHALL BE A MINIMUM OF 12". THE HEIGHT OF THE TRENCH CHECK SHALL EXTEND 12" ABOVE THE TOP OF THE PIPE. THE WIDTH OF THE TRENCH CHECK SHALL BE THE WIDTH OF THE TRENCH.
5. SEE SPECIFICATION SECTION 2100 FOR SEWER MAIN BEDDING AND BACKFILL.
6. #12 GAUGE GREEN INSULATED COPPER TRACER WIRE SHALL BE INSTALLED. TRACER WIRE TERMINAL BOXES SHALL BE INSTALLED DIRECTLY ABOVE THE SEWER SERVICE OR AS DETERMINED BY THE ENGINEER.
7. FOR SERVICES, TRACER WIRE SHALL RUN FROM THE WYE AND TERMINATE IN A FLUSH MOUNTED TRACER BOX WITH A GREEN CAST IRON LOCKABLE TOP. WIRE SHALL BE TAPED OR TIED TO THE PIPE AT 5' INTERVALS.
8. TRACER WIRE BOX SHALL BE INSTALLED WITHIN 1.0' OF PROPERTY LINE.
9. THE TRACER WIRE SHALL REMAIN CONTINUOUS TO THE GREATEST EXTENT POSSIBLE. SPLICES IN THE TRACER WIRE SHOULD BE MADE WITH SPLIT BOLT CONNECTORS. WIRE NUTS SHALL NOT BE USED. A WATER-PROOF CONNECTION IS NECESSARY TO PREVENT CORROSION.

LEE'S SUMMIT MISSOURI PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Date: 04/17 Drawn By: MJF Checked By: DL
BUILDING SEWER STUB AND RISER	SAN-1

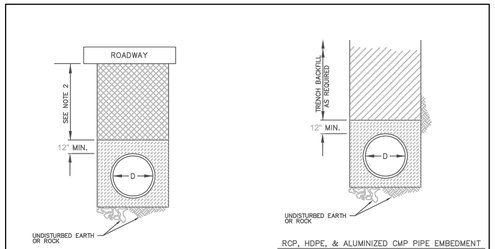


TYPICAL METER INSTALLATION – 2" AND SMALLER
NOT TO SCALE

NOTES:

1. METER INSTALLATION SHALL NOT BE LOCATED IN AREAS SUBJECT TO VEHICULAR TRAFFIC OR IN CONCRETE PAVEMENT WITHOUT CITY APPROVAL.
2. IF METER IS TO BE LOCATED OTHER THAN IN FRONT OF PROPERTY LINE, CITY APPROVAL SHALL BE OBTAINED.
3. CITY TO FURNISH ITEMS A-K.
4. NO OTHER EQUIPMENT SHALL BE INSTALLED IN THIS PIT.
5. 42" MINIMUM BURY DEPTH FOR ALL SERVICE LINES.
6. EXCAVATION FOR TAP TO EXPOSE 4 LINEAR FEET OF MAIN.
7. NO SPLICES ALLOWED BETWEEN METER AND MAIN.
8. SERVICE CONNECTION TAP AT APPROXIMATELY 45 DEGREES.
9. LID AND RISER RING SHALL BE SET SO THAT GROUND WATER WILL DRAIN AWAY FROM THE WELL.
10. CONTACT WATER UTILITIES, 816-969-1900, FOR REQUIREMENTS OF A METER LARGER THAN 2"

LEE'S SUMMIT MISSOURI PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063	Date: 02/13 Drawn By: JN Checked By: DL FILE: MAT-11 Rev: 1/14 Rev:
SERVICE CONNECTION/METER WELL	



STORM PIPE EMBEDMENT BENEATH ROADWAY

RCP, HDPE, & ALUMINIZED CMP PIPE EMBEDMENT

LEGEND	
D	NOMINAL PIPE DIAMETER
	TRENCH BACKFILL
	TAMPED GRANULAR BACKFILL (AB-3)
	GRANULAR BEDDING

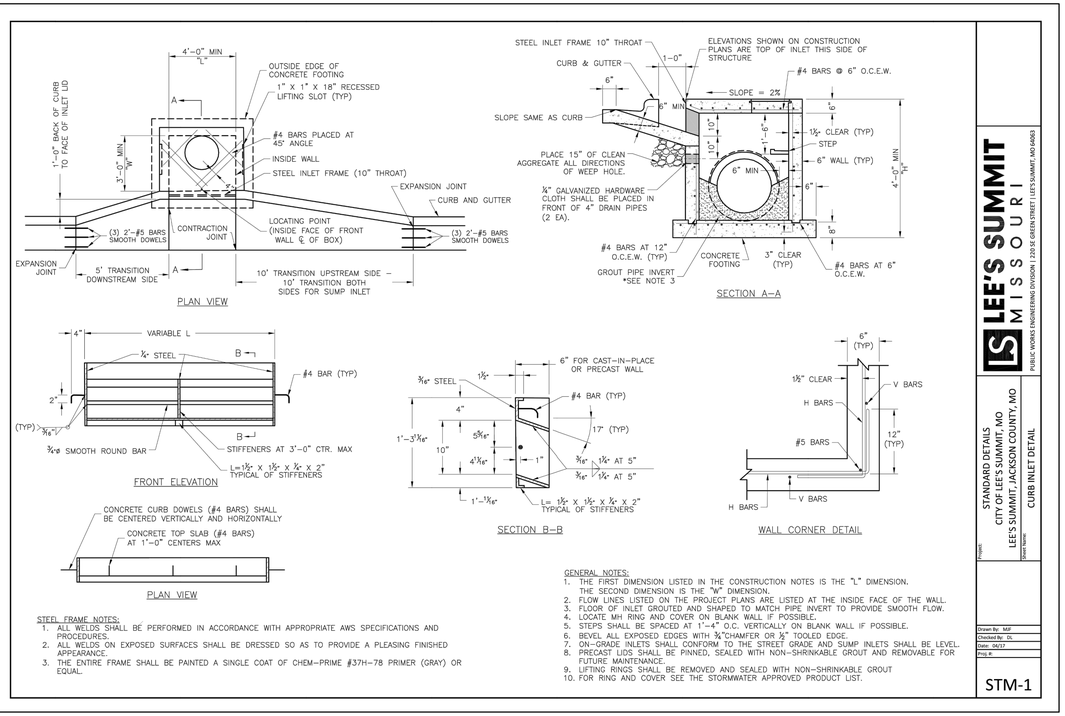
MINIMUM PIPE CLEARANCES (IN)		
D	PIPE SIDE CLEARANCE[1] (SOIL/ROCK)	PIPE BOTTOM CLEARANCE (SOIL/ROCK)
0"-27"	6/6	4/6
30"-60"	8/9	6/9
66"-UP	12/12	8/12

NOTES: 1. GRANULAR BEDDING SHALL BE 1/2" CLEAN ROCK WITH A MAXIMUM PARTICLE SIZE 3/4 INCH ROCK, PASSING #200 SIEVE ≤ 35% (PI ≤ 10 AND LL ≤ 40). MATERIAL TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL OR VIBRATING.

2. TAMPED GRANULAR BACKFILL (AB-3) SHALL BE GRANULAR MATERIAL WITH A MAXIMUM PARTICLE SIZE 1 – 1/2 INCH ROCK, PASSING #40 SIEVE (PI ≤ 8) 15 TO 50% AND #200 SIEVE ≤ 35%. THIS MATERIAL SHALL BE USED FOR ALL EXISTING AND PROPOSED STREET CROSSINGS.

3. TRENCH BACKFILL SHALL BE FINELY DIVIDED MATERIAL FREE FROM DEBRIS AND STONES, COMPACTED TO 95% MAXIMUM DENSITY.

1 HDPE Pipe Embedment
not to scale



STEEL FRAME NOTES:

1. ALL WELDS SHALL BE PERFORMED IN ACCORDANCE WITH APPROPRIATE AWS SPECIFICATIONS AND PROCEDURES.
2. ALL WELDS ON EXPOSED SURFACES SHALL BE DRESSED SO AS TO PROVIDE A PLEASING FINISHED APPEARANCE.
3. THE ENTIRE FRAME SHALL BE PAINTED A SINGLE COAT OF CHEM-PRIME #37H-78 PRIMER (GRAY) OR EQUAL.

GENERAL NOTES:

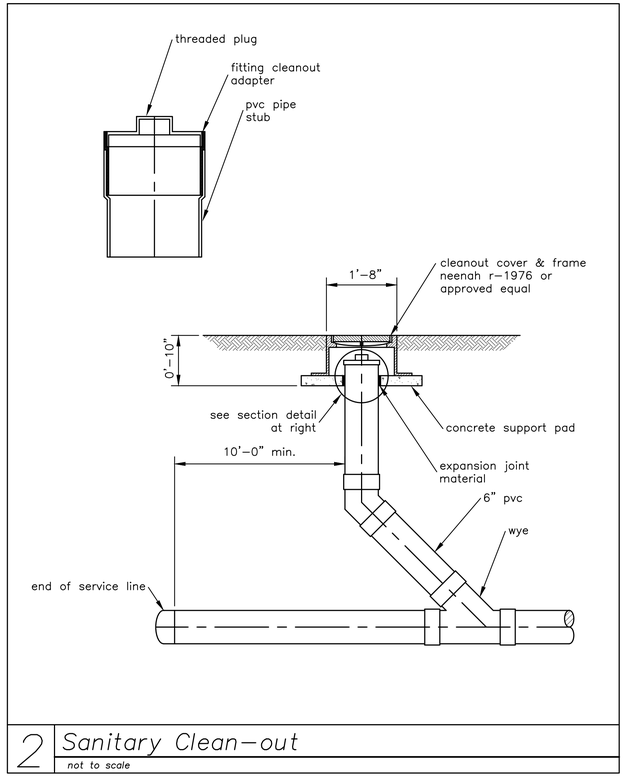
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. LOCATE MH RING AND COVER ON BLANK WALL IF POSSIBLE.
5. STEPS SHALL BE SPACED AT 1'-4" O.C. VERTICALLY ON BLANK WALL IF POSSIBLE.
6. BEVEL ALL EXPOSED EDGES WITH ½"CHAMFER OR ½" TOOLED EDGE.
7. ON-GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON-SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. LIFTING RINGS SHALL BE REMOVED AND SEALED WITH NON-SHRINKABLE GROUT
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Permits
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
Sheet Name
CURB INLET DETAIL

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #:

STM-1



2 Sanitary Clean-out
not to scale

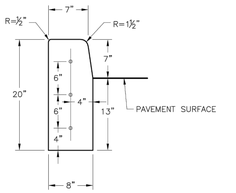
STATE OF MISSOURI
SKYLER LEE
MARTIN
NUMBER
PE-2018021223
PROFESSIONAL ENGINEER
02/16/2021

Details & Detail Center

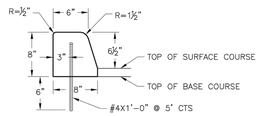
A New Facility for
Automotive Sales
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.21.2020
drawn by
SLM
checked by
PAM
revisions
02.16.2021 FDP

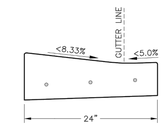
sheet number
C4.2
drawing type
fdp
project number
19076



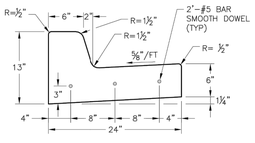
STRAIGHT CURB
(TYPE C-1)



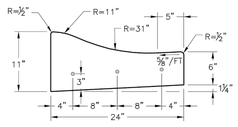
DOWELLED CURB
(TYPE DC)



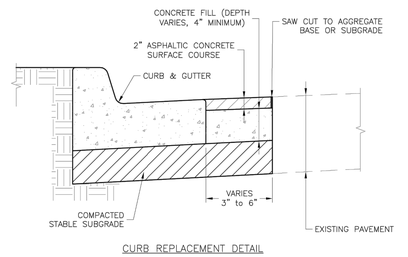
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



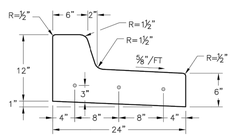
STRAIGHT BACK CURB & GUTTER
(TYPE CG-1)



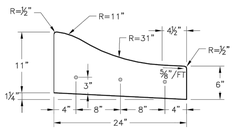
ROLL BACK CURB & GUTTER
(TYPE CG-2)



CURB REPLACEMENT DETAIL



STRAIGHT BACK DRY CURB & GUTTER
(TYPE CG-1 DRY)



ROLL BACK DRY CURB & GUTTER
(TYPE CG-2 DRY)

GENERAL NOTES

1. ¾" ISOLATION JOINTS WITH 3 (2'-#5 BAR) SMOOTH DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 150' INTERVALS. THESE DOWEL BARS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES.
2. 3" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
3. CONCRETE FILL SHALL HAVE UNIFORM AND SMOOTH FINISH
4. KCMMB 4K CONCRETE SHALL BE USED FOR ALL CURB.
5. ASPHALTIC CONCRETE SURFACE COURSE SHALL CONFORM TO STANDARD SPECIFICATIONS SECTION 2205.2.
6. CURBS FOR NEW STREETS SHALL BE BUILT ON ASPHALT OR AGGREGATE BASE AS SHOWN IN TYPICAL SECTION DETAIL.
7. WHITE CURING COMPOUND MUST BE APPLIED UNIFORMLY TO THE CONCRETE SURFACE IMMEDIATELY AFTER FINAL FINISHING.
8. ALL DOWELS & TIE BARS SHALL BE EPOXY COATED

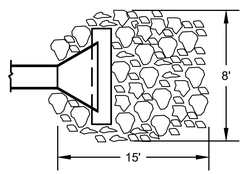
LEE'S SUMMIT MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
CURB & GUTTER DETAIL

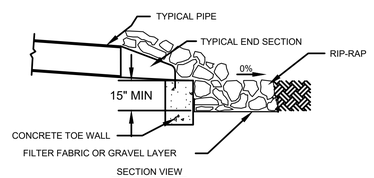
Finish:
Drawn Name:

Drawn By: MJF
Checked By: DL
Date: 04/17
Proj. #

GEN-4



PLAN VIEW

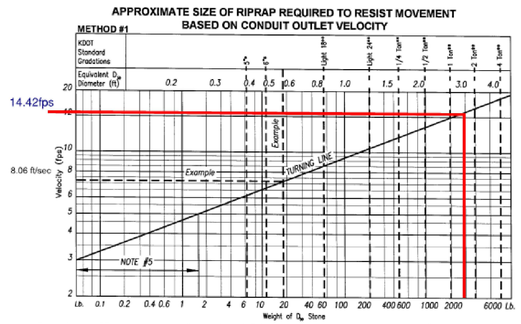


SECTION VIEW

PIPE OUTLET TO WELL DEFINED CHANNEL

PIPE OUTLET RIP-RAP DETAILS

APPROXIMATE SIZE OF RIPRAP REQUIRED TO RESIST MOVEMENT BASED ON CONDUIT OUTLET VELOCITY



Example: A 15" pipe has an exit velocity of 7.2 fps with a tail water depth of 30" and channel slope of 2%. Acceptable Riprap Size: D_{50}=0.58', W =19lbs., KDOT Gradation=Light 18", Max. Stress = (62.4)(2.5)(.02) = 3.2 psf < 5 psf O.K.

How to use this nomograph:

Method #1
1. Find the exit velocity at the outlet.
2. Intersect with Turning Line.
3. Read top and bottom scales to determine approximate weight and size of stone.
4. Read top scale to determine KDOT gradation of stone.
5. Compare to see if design sizes meet or exceed the sizes calculated by method 2 on this sheet.

Method #2
1. Calculate Maximum Shear Stress (Using Table).
2. Compare Maximum Shear Stress to Allowable Shear Stress from Table. Maximum shear stress must be equal or less than allowable stress or larger stone is required.

General Notes:
1. This nomograph allows the user to approximate the D_{50} stone size of riprap for conduit outlet protection based on the exit velocity of the conduit.
2. This nomograph is based on Figure 2.3.12-6a, "Guide for Estimating Stability of Channels and Large Rocks", KDOT Design Manual, Volume III, Bridge Section.
3. Conduit velocity as calculated by Manning's Equation.
4. Estimations based on this nomograph are only valid for velocities between 5 fps and 15 fps. Outlets with higher velocities should be investigated further.
5. Riprap is not normally required for velocity below 5 f.p.s. Consider grass lining materials.

METHOD #2 - MAX. SHEAR STRESS

$\tau_c = \gamma ds$

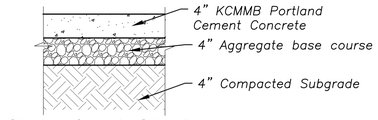
$\gamma = 62.4 pcf$

$d = depth\_of\_tailwater\_(ft)$

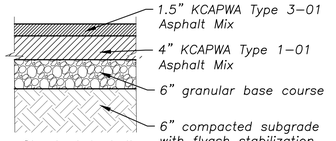
$s = slope\_at\_exit\_(ft/ft)$

Allowable Shear Stress for KDOT Standard Gradations	
Heavy Series	
4 Ton	27 psf
2 Ton	21 psf
1 Ton	16 psf
1/2 Ton	13 psf
1/4 Ton	10 psf
Light Series	
Light 24"	6 psf
Light 18"	5 psf
Stone for Ditch Lining	
6"	3 psf
5"	2 psf

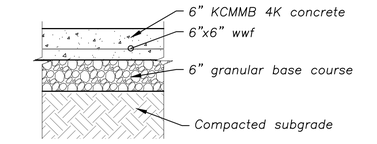
KDOT Gradations are based on the stone specifications from the KDOT Standard Specifications for State Road and Bridge Construction (1990) – * Table 12b Stone for Aggregate Ditch Lining, and ** Table 11 Stone for Riprap.



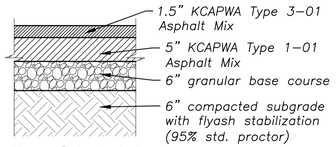
Standard Concrete Sidewalk



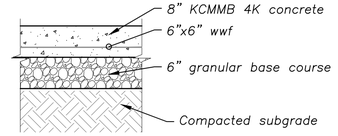
Standard Asphalt Pavement Section



Display Concrete Pavement Section

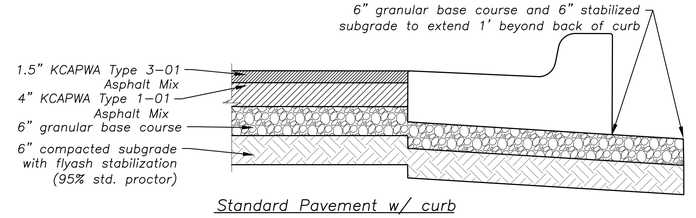


Heavy-Duty Asphalt Pavement Section

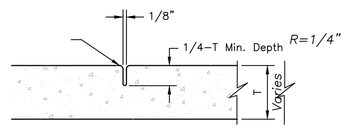


Standard Concrete Pavement Section

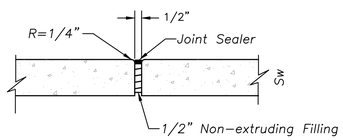
Notes:
1. All pavements shall conform to Lee's Summit City Standard.
2. Refer to the geotech for site recommendations.
3. Where city pavement standards and geotech recommendations differ, contractor shall use the more stringent of the two.
4. Any discrepancies shall be brought to the attention of the engineer.



Standard Pavement w/ curb



Contraction Joint
(see Note 2)



Isolation Joint
(see Note 3)

Joint Details

Notes

1. Concrete shall be KCMMB-4K unless otherwise noted.
2. Key all construction joints or use tie bars #4 Epoxy coated @ 12" o.c.
3. Longitudinal joint spacing to match width of sidewalk.
4. Isolation joints shall be placed where walk abuts driveways and similar structures, and 250' centers max.
5. Install 18" tie bars #4 Epoxy coated @ 18" o.c.

Pavement Details

Not To Scale

davidson
architecture&engineering
4301 Indian Creek Parkway
Overland Park, KS 66207
phone: 913.451.9380
fax: 913.451.9381
www.davidsonae.com

STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021223
PROFESSIONAL ENGINEER
02/16/2021

Pavement & Detail Center

A New Facility for
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2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.21.2020
drawn by
SLM
checked by
PAM
revisions
02.16.2021 FDP

sheet number
C4.3
drawing type
fdp
project number
19076

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architecture&engineering
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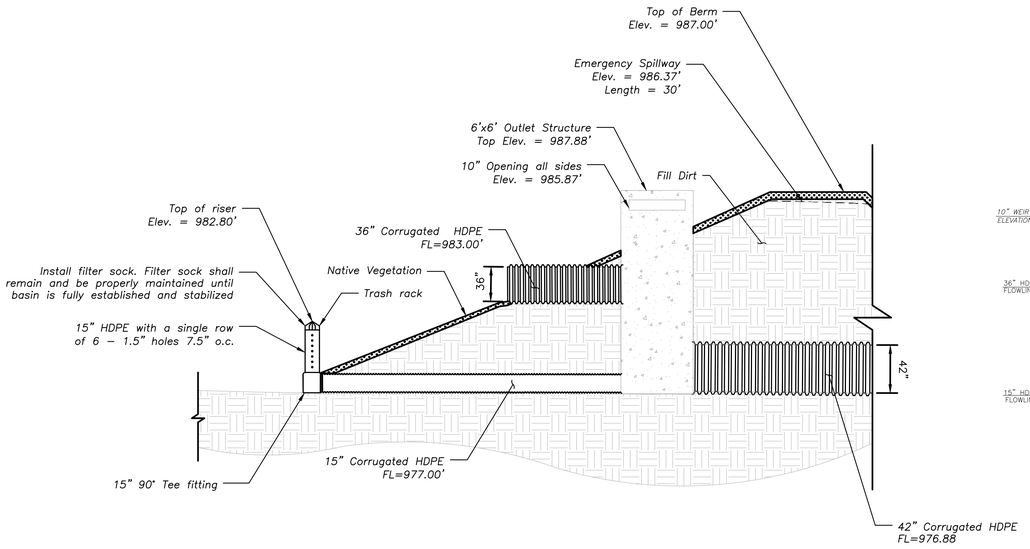
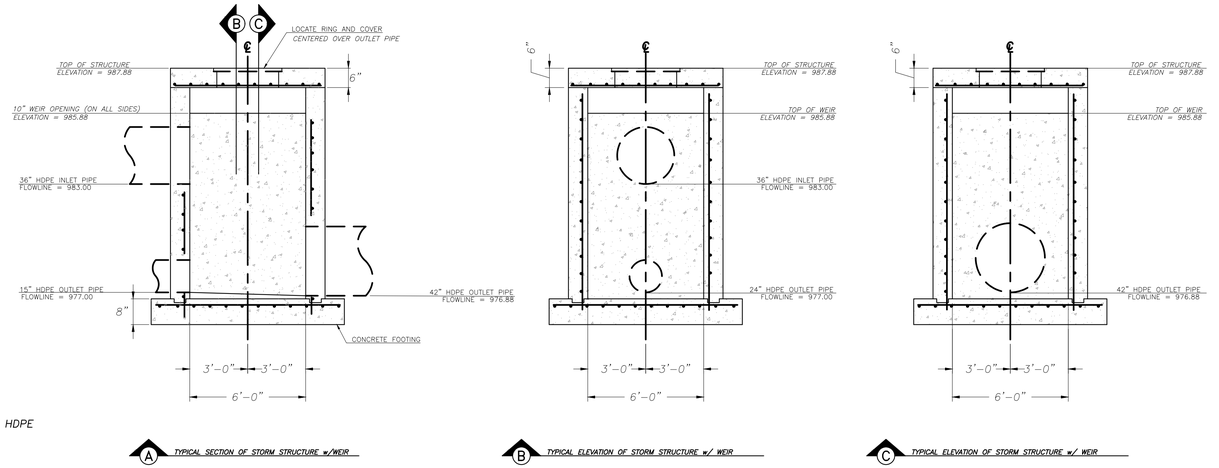


Detention Basin Outlet Detail

not to scale



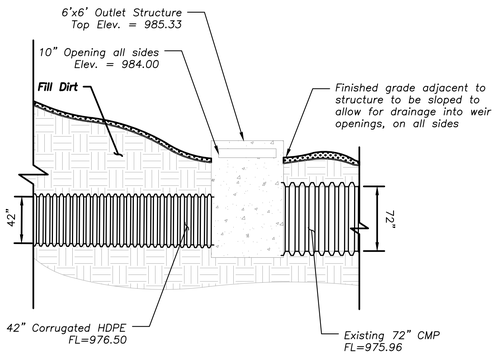
A TYPICAL SECTION OF STORM STRUCTURE w/WEIR

B TYPICAL ELEVATION OF STORM STRUCTURE w/ WEIR

C TYPICAL ELEVATION OF STORM STRUCTURE w/ WEIR

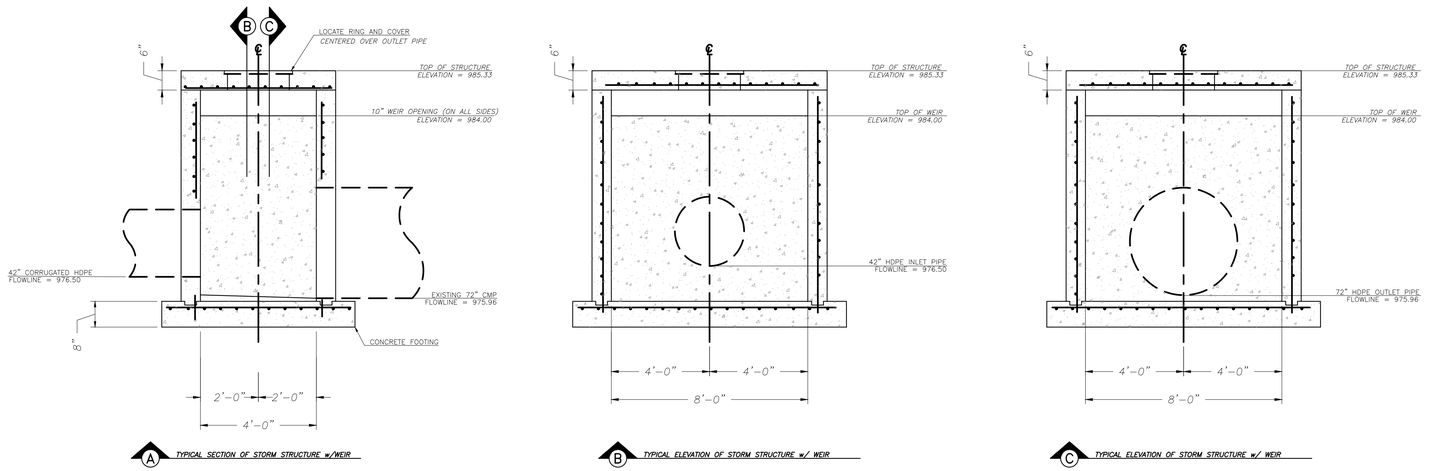
Detention Basin Outlet Structure (Str. 3–2)

not to scale



Junction Box Detail

not to scale



A TYPICAL SECTION OF STORM STRUCTURE w/WEIR

B TYPICAL ELEVATION OF STORM STRUCTURE w/ WEIR

C TYPICAL ELEVATION OF STORM STRUCTURE w/ WEIR

Junction Box Structure (Str. 3–3)

not to scale

STATE OF MISSOURI
SKYLER LEE MARTIN
NUMBER PE-2018021223
PROFESSIONAL ENGINEER
02/16/2021

Details & Detail Center

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2100 NE Independence Ave
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date
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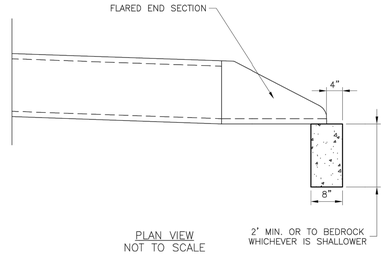
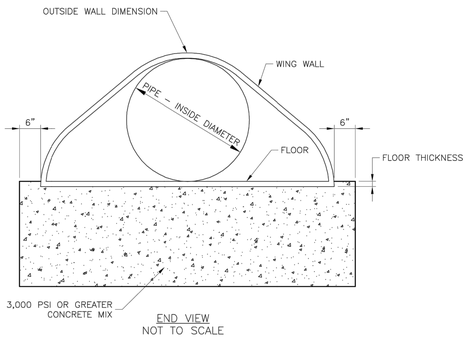


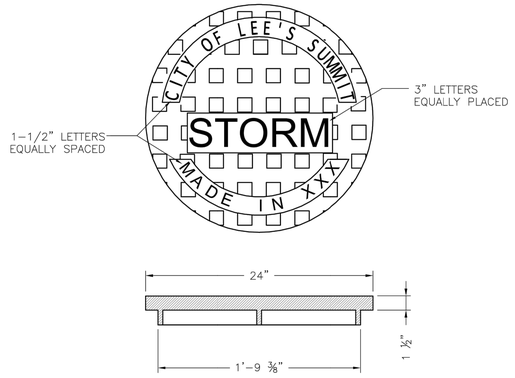


LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

FLARED END SECTION SUPPORT DETAIL

Date: 04/17 | Drawn By: MJF | Checked By: DL

STM-5



STANDARD 24" MANHOLE COVER
MINIMUM WEIGHT = 160 LB
NOTE: PICK HOLES NOT SHOWN

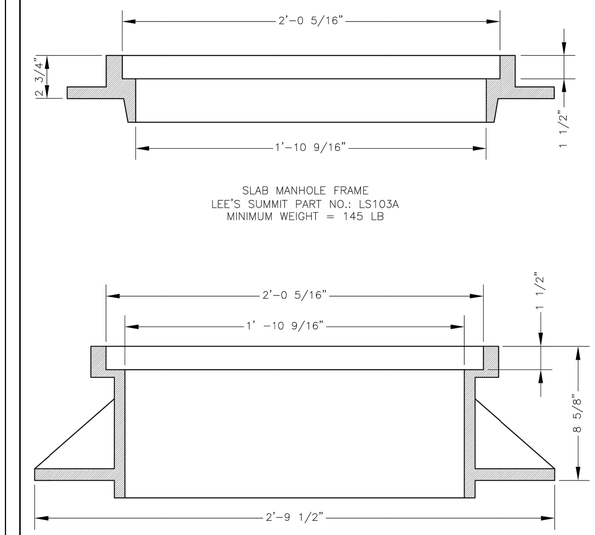
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STORM MANHOLE COVER DETAIL

Date: 04/17 | Drawn By: MJF | Checked By: DL

STM-6



SLAB MANHOLE FRAME
LEE'S SUMMIT PART NO.: LS103A
MINIMUM WEIGHT = 145 LB

STANDARD 24" MANHOLE FRAME
LEE'S SUMMIT PART NO.: LS101A
MINIMUM WEIGHT = 250 LB

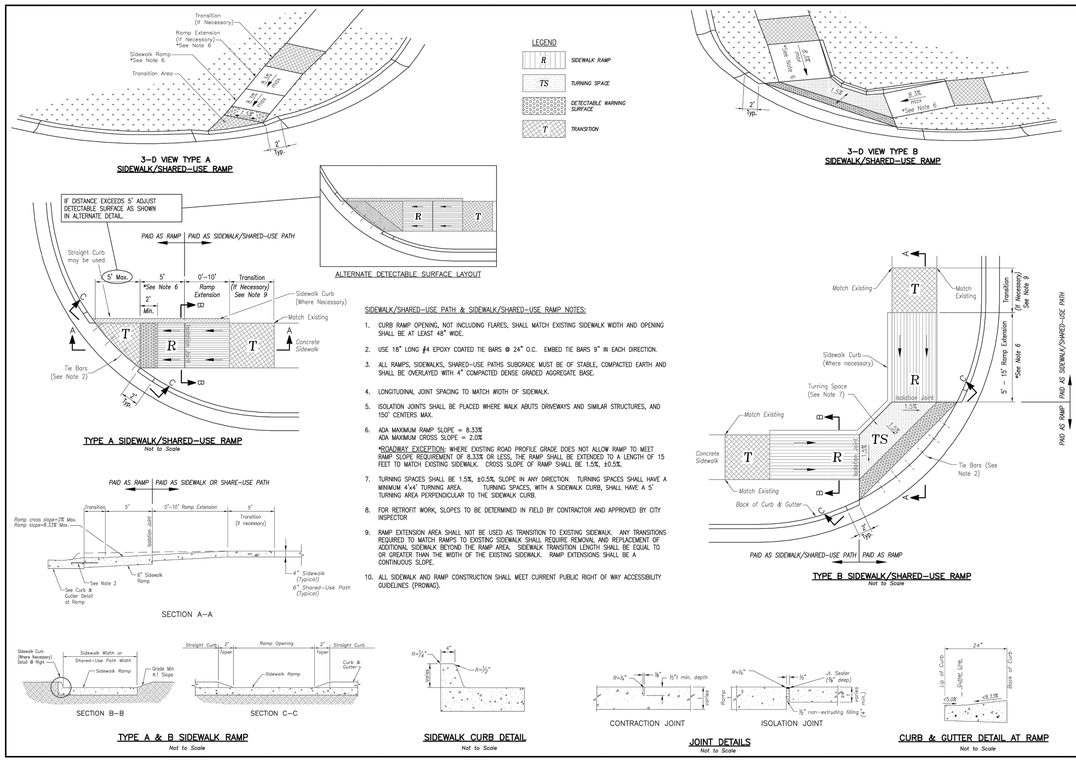
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

STORM MANHOLE FRAME DETAIL

Date: 04/17 | Drawn By: MJF | Checked By: DL

STM-7



LEE'S SUMMIT
MISSOURI
PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEN STREET | LEE'S SUMMIT, MO 64063

Project: STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO

Sheet Name: ADA RAMP RETROFIT DETAIL

Drawn By: MJF | Checked By: DL | Date: 04/17 | Proj. #:

GEN-3A

A New Facility for
Automotive Sales & Detail Center
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.21.2020
drawn by
SLM
checked by
PAM
revisions
02.16.2021 △ FDP

sheet number
C4.5
drawing type
fdp
project number
19076

davidson
architecture&engineering
4301 Indian Creek Parkway
Overland Park, KS 66207
phone: 913.451.9390
fax: 913.451.9391
www.davidsonae.com

2 Vicinity Plan
no scale

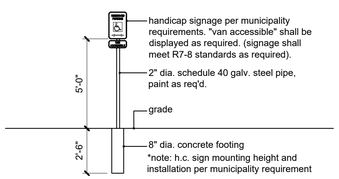
north

Site Criteria

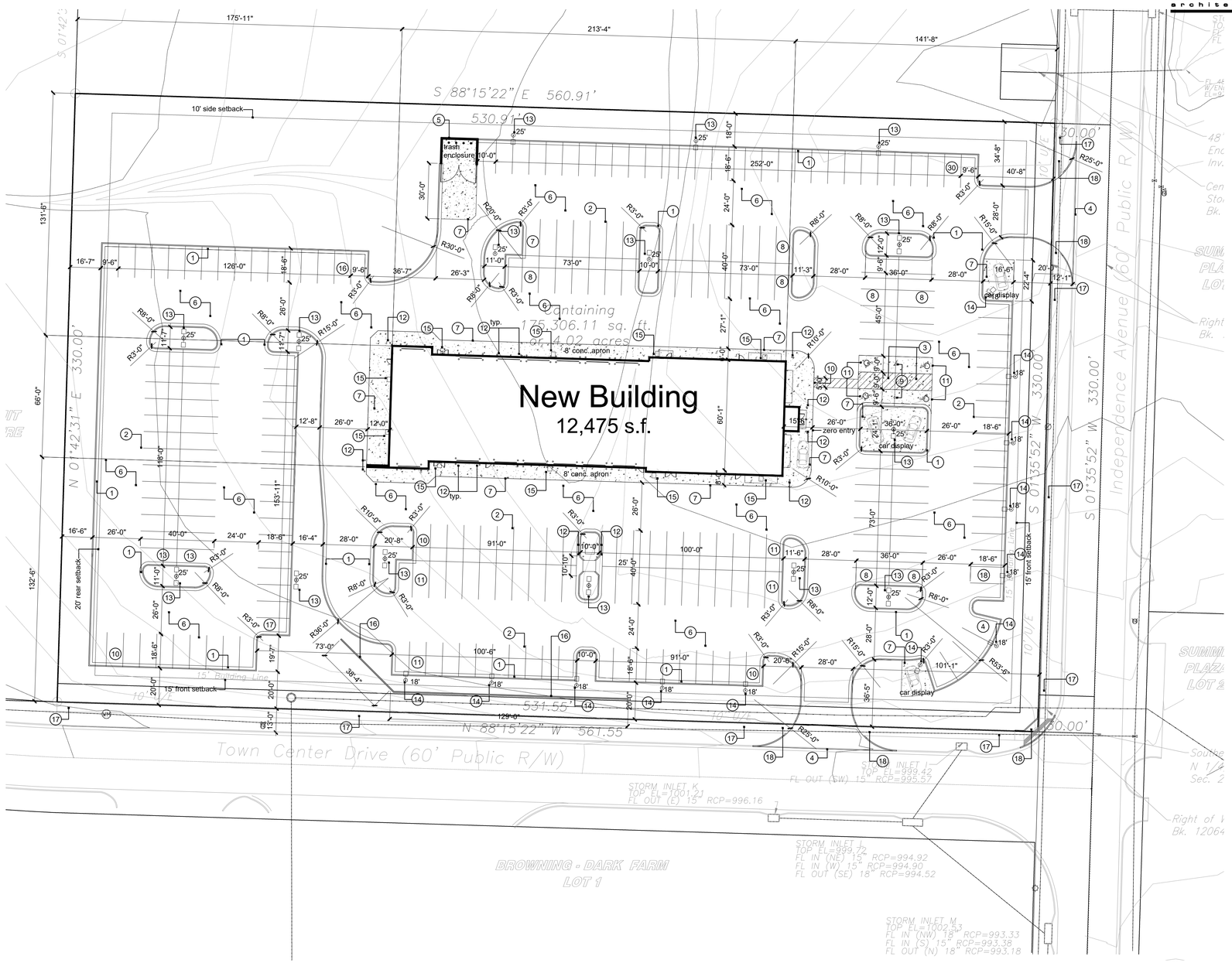
zone:	CP-2
site area:	approx. 175,306 s.f. or 4.02 acres
impervious site area :	124,303 s.f. <80%
green space:	51,003 s.f. >20%
setbacks:	front yard 15' side yard 10' rear yard 20'
building footprint:	12,944 s.f.
mezzanine:	1,480 s.f.
total building area:	14,424 s.f.
number of stories:	3 stories max., 2 stories actual
floor area ratio:	14,424 / 175,306 = 0.08
parking required:	
service establishments:	5 per 1,000 s.f., 16 x 5 = 80 spaces required including 4 accessible spaces
actual parking onsite:	248 parking spaces
Legal Description:	refer to civil drawings

construction notes

1. Furnish and install new concrete curb and gutter per Civil.
2. Parking lot striping shall be white w/ 4" stroke.
3. 4" white diagonal striping at 2'-0" on center max. contained in area as shown on plan.
4. Saw cut and remove existing curb & gutter and install new drive entrance. Match new drive elevation with existing street pavement. Re: civil.
5. Trash enclosure to be constructed using materials matching building, per details.
6. Install new asphalt pavement per civil.
7. Install new concrete pavement per civil.
8. Install concrete walk 4" thick, with 6x6 10/10 wwf steel mesh. Control joints at 6'-0" o.c. Broom finish for non-slip surface.
9. Install handicap signage. Mount sign at not more than 60" a.f.g. to bottom. Sign to contain the universal handicap symbol and "van accessible" as required per ADA. See detail.
10. Furnish and install ADA accessible ramp per detail and per civil.
11. Handicap and universal symbol painted white with 4" stroke.
12. Furnish and install bollards in conc. footings - 4' high, 6" diameter pea gravel concrete filled pipe bollards, paint.
13. Pole mounted LED site lighting on steel pole with concrete base not to exceed 25' in total height measured from finish grade. Specific fixture by electrical engineer and contractor.
14. Pole mounted LED site lighting on steel pole with concrete base not to exceed 18' in total height measured from finish grade. Specific fixture by electrical engineer and contractor.
15. Building mounted LED site lighting to match pole mounted fixture. Specific fixture by electrical engineer and contractor.
16. Furnish and install segmented retaining wall, color: charcoal blend. Wall design shall be performed by contractor's supplier.
17. Furnish and install new conc. sidewalk in right-of-way, per civil.
18. Furnish and install ADA accessible sidewalk ramp, per civil.



2 ada details
no scale



1 Site Plan
scale: 1" = 30'-0"

north

STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6868
REGISTERED ARCHITECT

02.22.2021

A New Facility For Automotive Sales & Detail Center

2100 NE Independence Ave.
Lee's Summit, Missouri 64064

date
03.25.2019
drawn by
jed
checked by
DAE
revisions

09.10.2019	
01.17.2020	
02.21.2020	pdp
03.24.2020	1
11.13.2020	FDP
01.25.2021	FDP
02.22.2021	permit

sheet number
A1.1
drawing type
FDP
project number
19076

plant schedule

		ITEM	QTY.	COMMON NAME	BOTANICAL NAME	SIZE & CONDITION
SHADE TREES		APA	24	AUTUMN PURPLE ASH	FRAXINUS AMERICANA 'AUTUMN PURPLE'	3" CAL.
		OGM	19	OCTOBER GLORY MAPLE	ACER RUBRUM 'OCTOBER GLORY"	3" CAL.
		SNM	13	SUPERFORM NORWAY MAPLE	ACER PLATANOIDES	3" CAL.
EVG.		WP	6	WHITE PINE	PINUS STROBUS	8'-0" HIGH
DEC. SHRUBS		DBB	91	DWARF BURNING BUSH	EUONYMUS ALATA 'COMPACTA'	5 GALLON, 24-30 INCHES
		GFS	20	GOLDENFLAME SPIREA	SPIRAEA X BUMALDA	5 GALLON, 24-30 INCHES
EG. SHRUBS		SGJ	60	SEA GREEN JUNIPER	JUNIPERUS CHINENSIS 'SEA GREEN'	5 GALLON, 24-30 INCHES
		CPB	62	CRIMSON PYGMY BARBERRY	BERBERIS 'ATROPURPUREA NANA'	5 GALLON, 24-30 INCHES

62 TOTAL TREES - 56 SHADE TREES, 6 EVERGREENS
233 TOTAL SHRUBS

landscape notes:

1. Landscaping shall be coordinated with the location of utilities, driveways and traffic clearance zones.
2. The contractor doing excavation on public right-of-way shall give 48 hours advance notice to and obtain information from utility companies.
3. Prior to commencement of work, the contractor shall notify all those companies which have facilities in the near vicinity of the construction to be performed.
4. Existing underground, overhead, utilities and drainage structures have been plotted from available information and therefore, their locations must be considered approximate only. It is the responsibility of the individual contractors to notify the utility companies to locate their utilities before actual construction.
5. Contractor shall verify location of and protect all utilities and structures. Damage to utilities and structures shall be repaired by the contractor to the satisfaction of the owner at no additional expense.
6. Entire site to be irrigated by underground system, including right of way as req'd. (limits of sod including all other disturbed area's and all planting beds)
7. Irrigation system shall include an automatic rain sensor.
8. All landscape materials shall be installed in accordance with the current planting procedures established by the most recent addition of the American Standard for Nursery Stock.
9. Trees planted per this plan shall be installed during the spring (march 15 through june 15) or fall (september 15 through december 1). Written city approval will be required for planting during other times of the year.
10. Stake and guy all trees per planting details.
11. Install all shrubs and groundcover per planting details.
12. Elevation of top of mulch shall be 1/2" below any adjacent pavement/turf areas.
13. Root stimulator shall be applied to the soil backfill of each plant during installation.
14. Contractor shall verify all landscape material quantities and shall report any discrepancies immediately to the Architect.
15. Contractor shall stake plant locations in the field and have approval by the Architect before proceeding with installation.
16. Contractor shall guarantee all plant material for a period of one (1) year from date of initial acceptance. Contractor is responsible for maintaining plant material until acceptance is received. Maintenance shall include watering, maintaining plants in vertical position and shrub bed weed control.
17. All plant material shall meet or exceed minimum requirements defined by the "American Standard for Nursery Stock" ANSI Z60.1.
18. No plant material shall be substituted without written approval of the Architect per specifications.
19. Trees and seasonal color areas shall be mulched with three (3) inches minimum shredded hardwood mulch. Planting beds as delineated shall be separated from pavement/turf areas with metal edging and mulched with three (3) inches minimum shredded hardwood mulch over weed barrier fabric, except where otherwise specified.
20. All existing plant material to be retained shall be wrapped with orange, or bright, colored plastic snow fence around base of trees and around all shrubs. Stake to hold in place during construction.
21. All shrubs used as parking buffer to be min. 18" tall at planting and maintained 3'-0" max. height. Install plants not to encroach upon cars parked, when at full growth.
22. All trees with above a 2" caliper shall be double staked, while smaller trees shall be single staked.
23. Ground mechanical and electrical equipment shall be wholly screened from street right-of-way and residential developments.
24. Maximum slope shall be not greater than 3 : 1.
25. All portions of site not covered by paving, mulch, plantings, etc. are to be sodded. Sod shall extend to all disturbed areas and shall include portions of right of way if necessary.

LANDSCAPE REQUIREMENTS

site area: 175,306 s.f. / 4.02 acres
building footprint: 12,475 s.f.

impervious area: 124,303 s.f. = 71% <80%
green space: 51,003 s.f. = 29% >20%

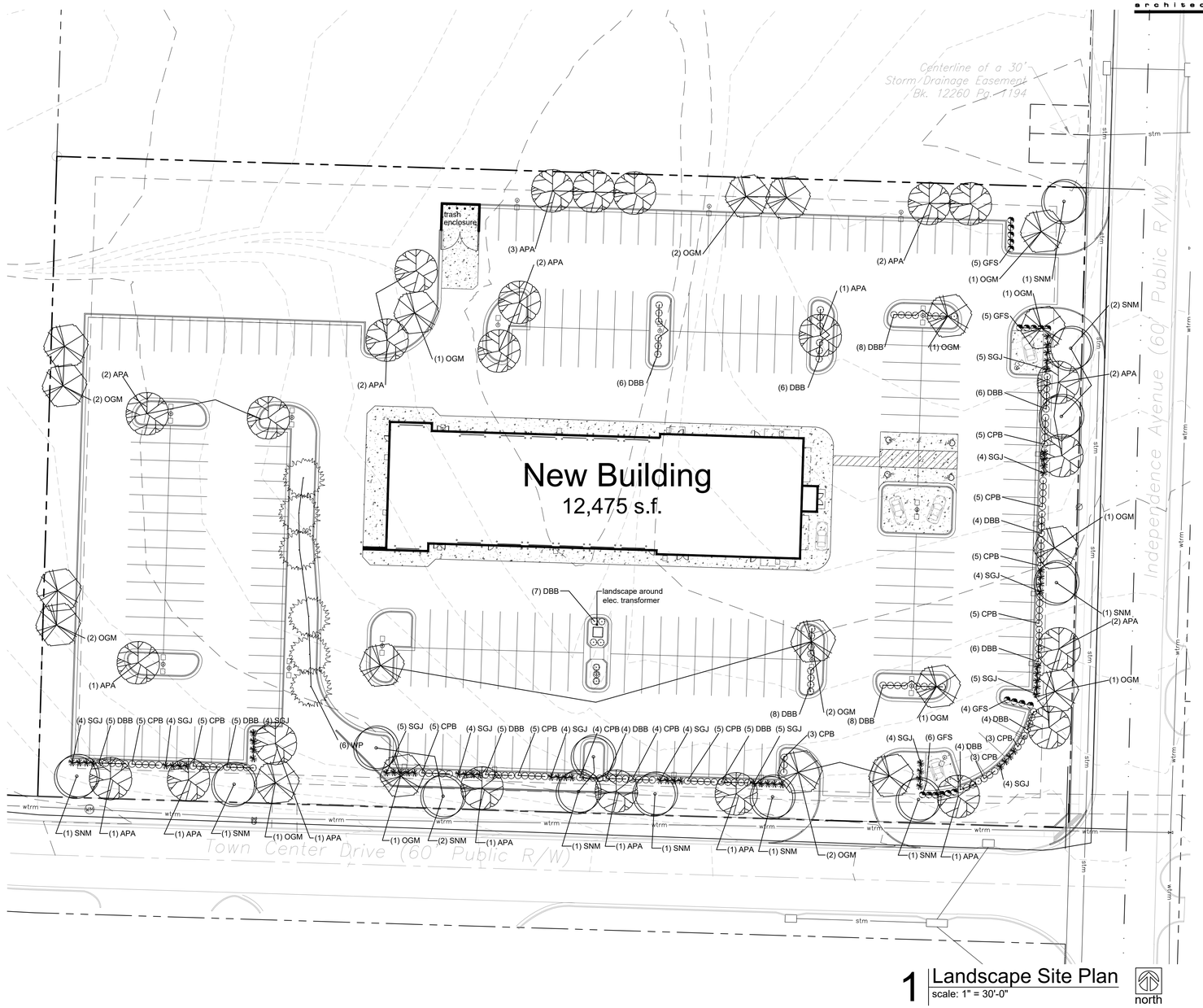
open area: 175,306 s.f. (site) - 12,862 s.f. (building) = 162,444 s.f.
open area trees: 162,444 s.f. / 5,000 s.f. = 32 required and 32 trees provided
open area shrubs: 162,444 s.f. / 5,000 s.f. x 2 = 65 required and 66 shrubs provided

street frontage at Town Center Drive - 531 feet
20'-0" landscape strip provided
1 tree per 30 l.f. - 531 / 30 = 18 required and 18 trees provided
1 shrub per 20 l.f. - 531 / 20 = 27 required and 111 shrubs provided with parking screening

street frontage at Independence Ave - 330 feet
20'-0" landscape strip provided
1 tree per 30 l.f. - 330 / 30 = 11 required and 11 trees provided
1 shrub per 20 l.f. - 330 / 20 = 17 required and 59 shrubs provided with parking screening

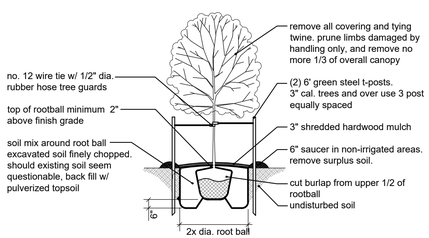
landscape islands and parking screening
5% of parking area for islands = 5,615 s.f. required, 5,775 s.f. provided
parking lot screening - 12 shrubs per 40 l.f.
Town Center Drive 367 l.f. / 40 x 12 = 110 shrubs required, 111 shrubs provided
Independence Ave 190 l.f. / 40 x 12 = 57 shrubs required, 59 shrubs provided
100% screening along street frontage achieved with landscaping

Total:
61 total trees required, 62 trees provided
222 total shrubs required, 233 shrubs provided

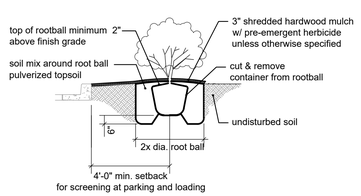


1 Landscape Site Plan
scale: 1" = 30'-0"

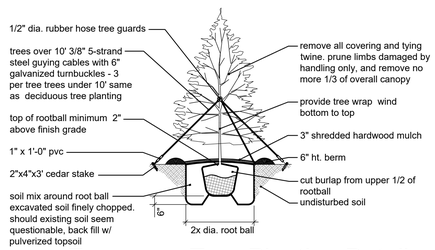
north



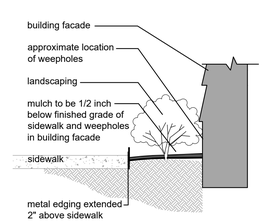
5 Deciduous Tree Planting Detail
not to scale



4 Shrub Planting Detail
not to scale



3 Evergreen Tree Planting Detail
not to scale



2 Edging Detail
not to scale

davidson
architecture&engineering
4301 Indian Creek Parkway
Overland Park, KS 66207
phone: 913.451.9380
fax: 913.451.9381
www.davidsonae.com

STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6908
REGISTERED ARCHITECT

02.22.2021

A New Facility For
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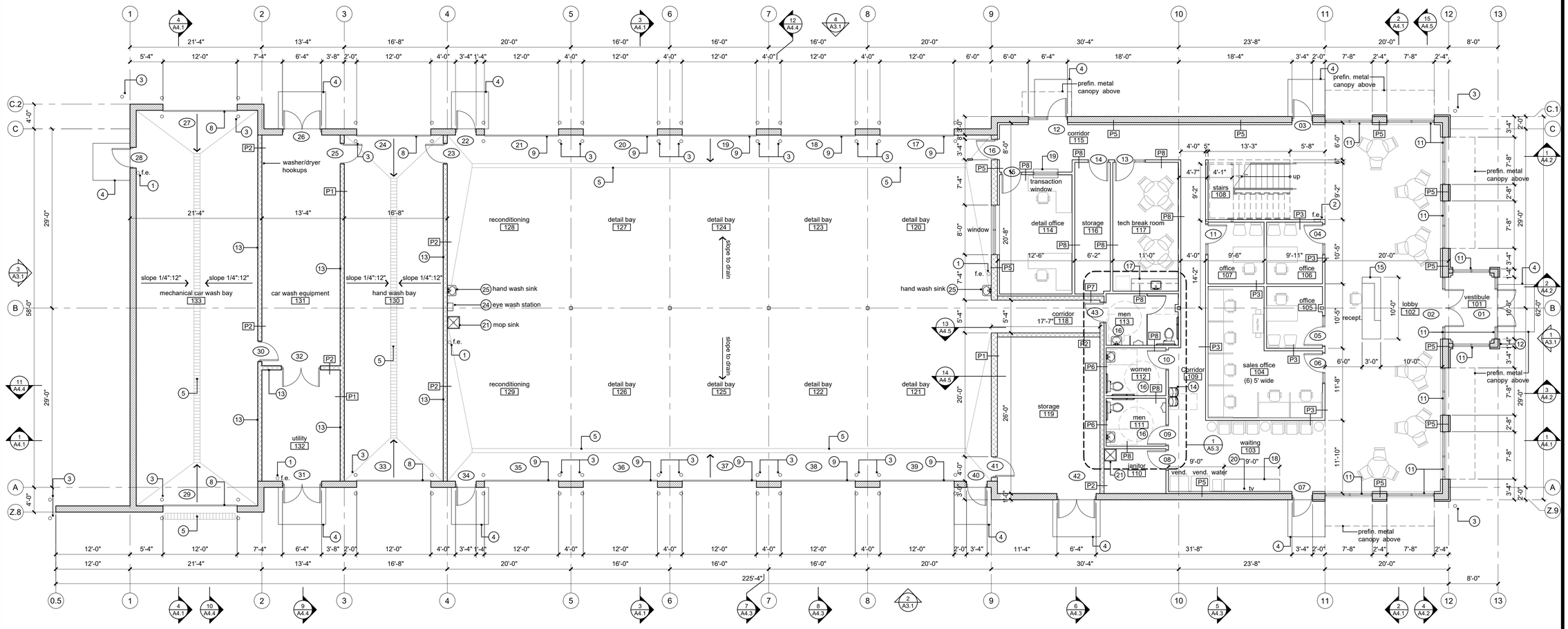
STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6868
REGISTERED ARCHITECT

02.22.2021

A New Facility for Automotive Sales & Detail Center

2100 NE Independence Ave
Lee's Summit, Missouri 64064



symbol legend:

- ## — door tag
- ## — construction note
- P# — partition type
- room name ### — room tag
- # / A## # — elevation
- # / A## # — wall section
- # / A## # — enlarged detail

general notes:

- Double keyed locks are not permitted on any required or marked exit.
- Exit/emergency lighting are subject to an on site inspection.
- HVAC system to have approved interconnected, smoke detector activated, automatic shutoffs with the detectors located in the return duct.
- Furnish and install approved address numbers on front and rear of building per governing jurisdiction.
- Building construction must fully comply with all requirements of ADA/ANSI accessibility guidelines.
- Provide 44" min. clear in all exit passageways.
- Exit doors shall be openable from the inside without the use of a key or any special knowledge or effort.
- Any new exterior utility service equipment shall be painted to match the building standard colors.
- Furnish and install horns & strobes as required.
- Construction materials exposed within plenums shall be non-combustable or shall have a flame spread rating of not more than 25 and a smoke developed rating of not more than 50.
- All low voltage wire and cable, optical fiber, pneumatic tubing, and all ducts and duct coverings, linings and connectors install within plenum areas must be rated for plenum use.
- Furnish and install data/voice rough-in throughout per owner's requirements.

construction notes: (#)

1. Furnish and install 3A-40BC rated F.E. min. 5lb. (surface mounted) with approved mounting @ 48" a.f.f. - verify quantity and location with Fire Marshall.
2. Furnish and install semi-recessed fire extinguisher cabinet with white finish and vision panel in door, with (min. 5lb.) 3A-40BC fire extinguisher, bottom at 36" a.f.f. Coordinate location as directed by Fire Marshall.
3. Furnish and install 4' high, 6" diameter pea gravel concrete filled pipe bollards at interior and exterior (galv.) sides of all overhead doors per details – to be painted safety yellow.
4. Furnish and install concrete stoop at exterior doors per structural.
5. Install trench and floor drain system per MEP drawings. Slope slab to drain.
8. Furnish and install power operated insulated sectional overhead door, tracks and controls for 12' x 14' doors.
9. Furnish and install power operated aluminum/glass sectional overhead door, tracks and controls for 12' x 14' doors.
10. Furnish and install 30" x 36" roof hatch and ladder per detail. Coordinate final location with roof joist layout.
11. Furnish and install 1" clear, insulated glass in thermally broken, clear anodized aluminum storefront frames per details. Caulk around all interior and exterior perimeter joints.
12. Furnish and install Knox Box. Verify location and height with local fire department prior to installation.
13. See detail sheet A4 for top of CMU wall detail.
14. Install new hi/lo drinking fountain per MEP and per ADA/ANSI.
15. Furnish and install casework reception desk per details noted on drawings with plastic laminate and solid surfaces at various heights. Provide grommets in countertops per owner requirements. Quantity and location per owner.
16. Furnish and install restrooms with a 67" turning radius w/10" max. overlap for knee and toe clearance per ADA, wall mounted sink with gooseneck/wrist blade faucet at 34" a.f.f., 36" and 42" grab bars, 6" and 12" from corner respectively and 18" vertical grab bar per detail. Include toilet accessories and stainless steel framed mirror in each restroom per drawings. Install blocking for all wall mounted accessories.
17. Furnish and install casework per details in break room with solid surface countertop at 2'-10" a.f.f. and stainless steel sink with gooseneck/wrist blade faucet and plastic laminate base and wall cabinets.
18. Furnish and install casework per details in waiting with solid surface countertop at 2'-10" a.f.f. and plastic laminate base cabinets.
19. Furnish and install bank style transaction window, clear anod. alum. with tempered clear glass, voice hole and slide under document tray. Furnish and install plastic laminate sill on both sides of window per detail.
20. Furnish and install blocking and electrical for owner supplied TV's. Verify final location with owner.
21. Furnish and install janitor mop basin with shelf above. Provide blocking as required.
22. Install 4' x 8' plywood on utility walls for MEP and voice/data installation.
23. Furnish and install push button ADA control for doors 01 and 02. Refer also to electrical.
24. Furnish and install eye wash sink, per MEP.
25. Install hand wash sink with soap and towel dispensers.

partition legend:

- P1 — full height 12" thick CMU wall: full height 12" thick CMU wall to deck *reinforcing and grouting per structural, epoxy painted.
- P2 — full height 8" thick CMU wall: 8" thick CMU wall infill existing opening *reinforcing and grouting per structural, epoxy painted.
- P3 — full height insulated partition: 3 5/8" metal studs at 16" o.c. with 5/8" gypsum on each side full height to underside of structure with deep leg slip track per detail and sound attenuation batt insulation full height. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.
- P4 — full height partition: 3 5/8" metal studs at 16" o.c. with 5/8" gypsum on each side full height to underside of structure with deep leg slip track per detail. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.
- P5 — furred partition: 3-5/8" metal studs at 16" o.c. with 5/8" gypsum on exposed side to 6" above ceiling or to deck where there is no ceiling. Install batt insulation full height. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.
- P6 — furred partition: 3 5/8" metal studs at 16" o.c. with 5/8" gypsum on exposed side to 6" above ceiling or to deck where there is no ceiling. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.
- P7 — 8" thick CMU wall: 8" thick CMU wall to 10'-8" *reinforcing and grouting per structural, epoxy painted
- P8 — partition: 3 5/8" metal studs at 16" o.c. with 5/8" gypsum on both sides to 6" above ceiling. Install batt insulation. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.

- Wall height note: Utilize 3 5/8" metal studs @ 16" o.c. to an unbraced height of 13'-8", at heights to 26' use 6" 20 ga. studs @ 16" o.c. - adjust stud size & spacing as req'd. for allowable L/240 deflection for 5 psf wind load. Verify stud gauge with supplier.
- Expansion joint note: Expansion joints shall be installed at a max. of 30'-0". Joints shall also be located to coord. w/ anticipated building movement, structural elements, and substrate transitions.
- Wet wall note: Utilize Dens-Armour Plus in all plumbing wet walls, walls receiving ceramic tile, and all walls adjacent to plumbing walls, restrooms and locker rooms or where anticipated to be in contact with moisture. Utilize Dens-Shield at all wet walls and skimcoat, if not receiving tile.
- Install slip track per detail where required.

date
11.13.2021
drawn by
DAE
checked by
DAE
revisions

01.25.2021	FDP
02.03.2021	FDP
02.22.2021	permit

sheet number
A2.1
drawing type
permit
project number
19076

general notes:

- Double keyed locks are not permitted on any required or marked exit.
- Exit/emergency lighting are subject to an on site inspection.
- HVAC system to have approved interconnected, smoke detector activated, automatic shutoffs with the detectors located in the return duct.
- Furnish and install approved address numbers on front and rear of building per governing jurisdiction.
- Building construction must fully comply with all requirements of ADA/ANSI accessibility guidelines.
- Provide 44" min. clear in all exit passageways.
- Exit doors shall be openable from the inside without the use of a key or any special knowledge or effort.
- Any new exterior utility service equipment shall be painted to match the building standard colors.
- Furnish and install horns & strobes as required.
- Construction materials exposed within plenums shall be non-combustable or shall have a flame spread rating of not more than 25 and a smoke developed rating of not more than 50.
- All low voltage wire and cable, optical fiber, pneumatic tubing, and all ducts and duct coverings, linings and connectors install within plenum areas must be rated for plenum use.
- Furnish and install data/voice rough-in throughout per owner's requirements.

partition legend:

P1 — full height 12" thick CMU wall:
full height 12" thick CMU wall to deck
*reinforcing and grouting per structural, epoxy painted.

P2 — full height 8" thick CMU wall:
8" thick CMU wall infill existing opening
*reinforcing and grouting per structural, epoxy painted.

P3 — full height insulated partition:
3 5/8" metal studs at 16" o.c. with 5/8" gypsum on each side full height to underside of structure with deep leg slip track per detail and sound attenuation batt insulation full height. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.

P4 — full height partition:
3 5/8" metal studs at 16" o.c. with 5/8" gypsum on each side full height to underside of structure with deep leg slip track per detail. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.

P5 — furred partition:
3-5/8" metal studs at 16" o.c. with 5/8" gypsum on exposed side to 6" above ceiling or to deck where there is no ceiling. Install batt insulation full height. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.

P6 — furred partition:
3 5/8" metal studs at 16" o.c. with 5/8" gypsum on exposed side to 6" above ceiling or to deck where there is no ceiling. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.

P7 — 8" thick CMU wall:
8" thick CMU wall to 10'-8"
*reinforcing and grouting per structural, epoxy painted

P8 — partition:
3 5/8" metal studs at 16" o.c. with 5/8" gypsum on both sides to 6" above ceiling. Install batt insulation. Stud gage per supplier. Utilize Dens-Armour Plus at all restroom walls.

- Wall height note: Utilize 3 5/8" metal studs @ 16" o.c. to an unbraced height of 13'-8", at heights to 26' use 6" 20 ga. studs @ 16" o.c. - adjust stud size & spacing as req'd. for allowable L/240 deflection for 5 psf wind load. Verify stud gauge with supplier.
- Expansion joint note: Expansion joints shall be installed at a max. of 30'-0". Joints shall also be located to coord. w/ anticipated building movement, structural elements, and substrate transitions.
- Wet wall note: Utilize Dens-Armour Plus in all plumbing wet walls, walls receiving ceramic tile, and all walls adjacent to plumbing walls, restrooms and locker rooms or where anticipated to be in contact with moisture. Utilize Dens-Shield at all wet walls and skimcoat, if not receiving tile.
- Install slip track per detail where required.

construction notes: (#)

1. Furnish and install 3A-40BC rated F.E. min. 5lb. (surface mounted) with approved mounting @ 48" a.f.f. - verify quantity and location with Fire Marshall.
2. Furnish and install semi-recessed fire extinguisher cabinet with white finish and vision panel in door, with (min. 5lb.) 3A-40BC fire extinguisher, bottom at 36" a.f.f. Coordinate location as directed by Fire Marshall.
3. Furnish and install 4' high, 6" diameter pea gravel concrete filled pipe bollards at interior and exterior (galv.) sides of all overhead doors per details – to be painted safety yellow.
4. Furnish and install concrete stoop at exterior doors per structural.
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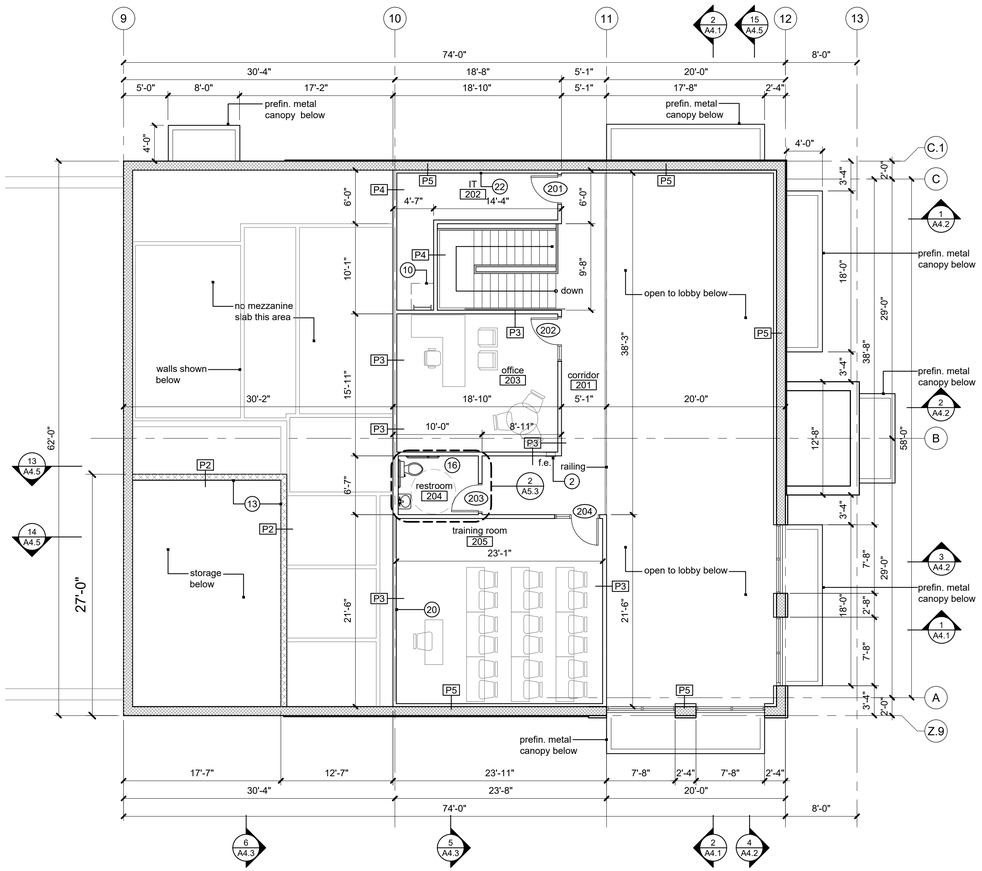
14. Install new hi/lo drinking fountain per MEP and per ADA/ANSI.
15. Furnish and install casework reception desk per details noted on drawings with plastic laminate and solid surfaces at various heights. Provide grommets in countertops per owner requirements. Quantity and location per owner.
16. Furnish and install restrooms with a 67" turning radius w/10" max. overlap for knee and toe clearance per ADA, wall mounted sink with gooseneck/wrist blade faucet at 34" a.f.f., 36" and 42" grab bars, 6" and 12" from corner respectively and 18" vertical grab bar per detail. Include toilet accessories and stainless steel framed mirror in each restroom per drawings. Install blocking for all wall mounted accessories.
17. Furnish and install casework per details in break room with solid surface countertop at 2'-10" a.f.f. and stainless steel sink with gooseneck/wrist blade faucet and plastic laminate base and wall cabinets.
18. Furnish and install casework per details in waiting with solid surface countertop at 2'-10" a.f.f. and plastic laminate base cabinets.
19. Furnish and install bank style transaction window, clear anod. alum. with tempered clear glass, voice hole and slide under document tray. Furnish and install plastic laminate sill on both sides of window per detail.
20. Furnish and install blocking and electrical for owner supplied TV's. Verify final location with owner.
21. Furnish and install janitor mop basin with shelf above. Provide blocking as required.
22. Install 4' x 8' plywood on utility walls for MEP and voice/data installation.
23. Furnish and install push button ADA control for doors 01 and 02. Refer also to electrical.
24. Furnish and install eye wash sink, per MEP.
25. Install hand wash sink with soap and towel dispensers.



1 Mezzanine Floor Plan

scale: 1/8" = 1'-0"

north

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STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6566
REGISTERED ARCHITECT

02.22.2021

A New Facility for

Automotive Sales & Detail Center

2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
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drawn by
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checked by
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02.03.2021	FDP
02.22.2021	permit

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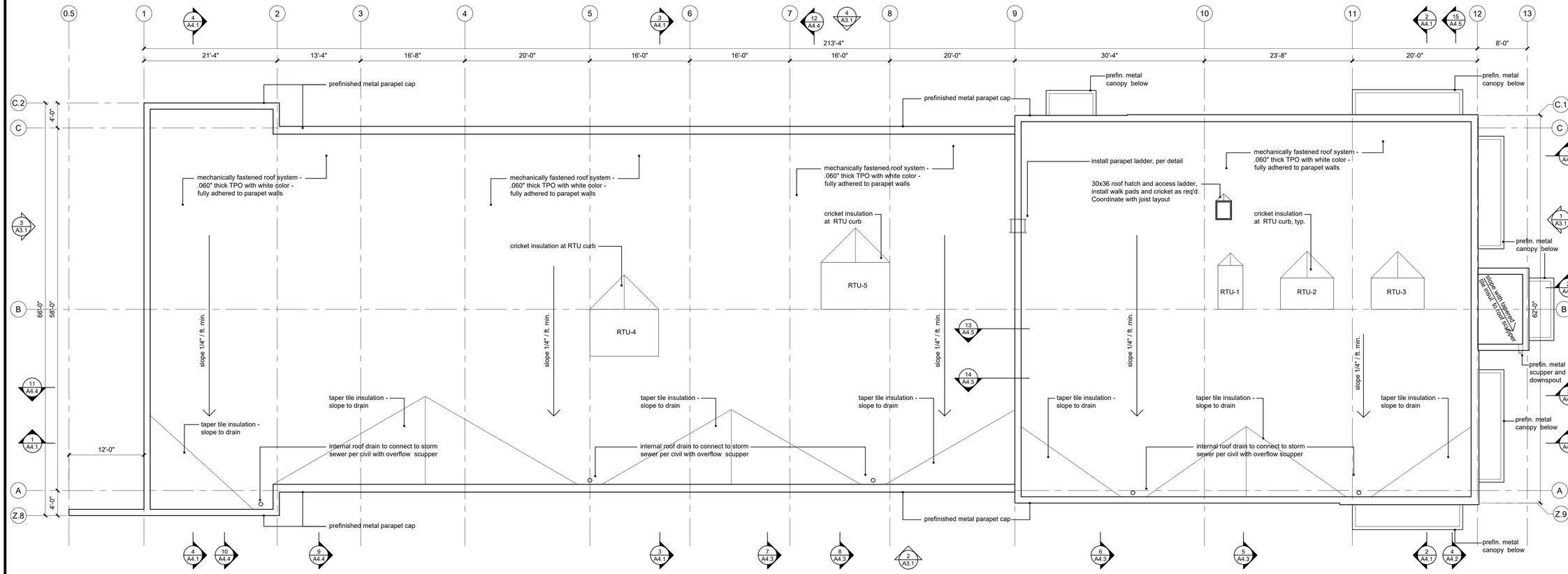
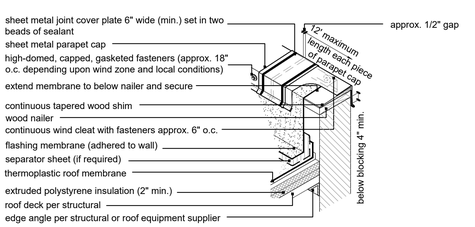


1 Roof Plan
scale: 1/8" = 1'-0"

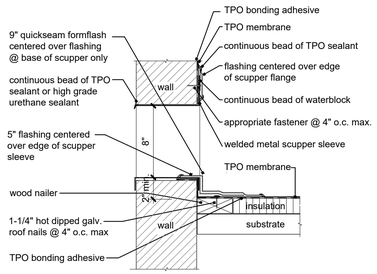
north

roof notes:

1. All roof penetrations shall be flashed per details and per roofing manufacturer's recommendations.
2. Furnish and install roof vents as req'd by code.
3. Refer to MEP planns for roof top mounted equipment.



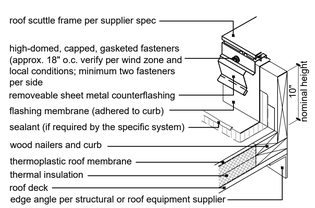
2 Cap Flashing Detail
scale: NTS



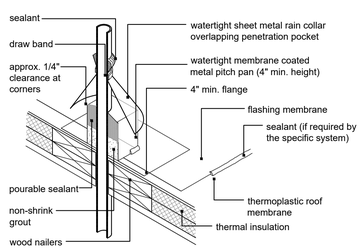
4 Overflow Scupper Detail
scale: NTS

Requirements:

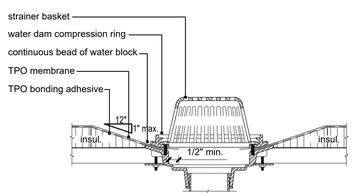
1. Scupper must be welded metal sleeve. Round all sheet metal flange corners.
2. Wood nailer must be installed to meet applicable building codes or 200 lbs. per sq. linear ft. min. at any given direction.
3. Flange of metal must be fully supported by wood and terminated at least 12" from edge of wood.



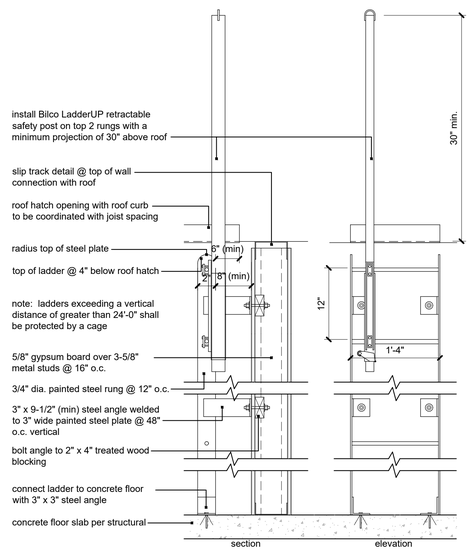
3 Roof Hatch Detail
scale: NTS



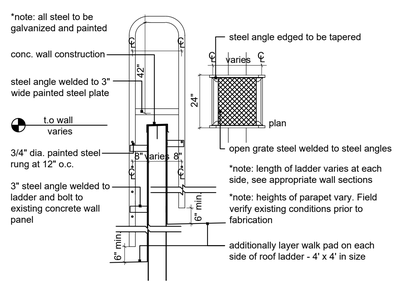
5 Flue Penetration
scale: NTS



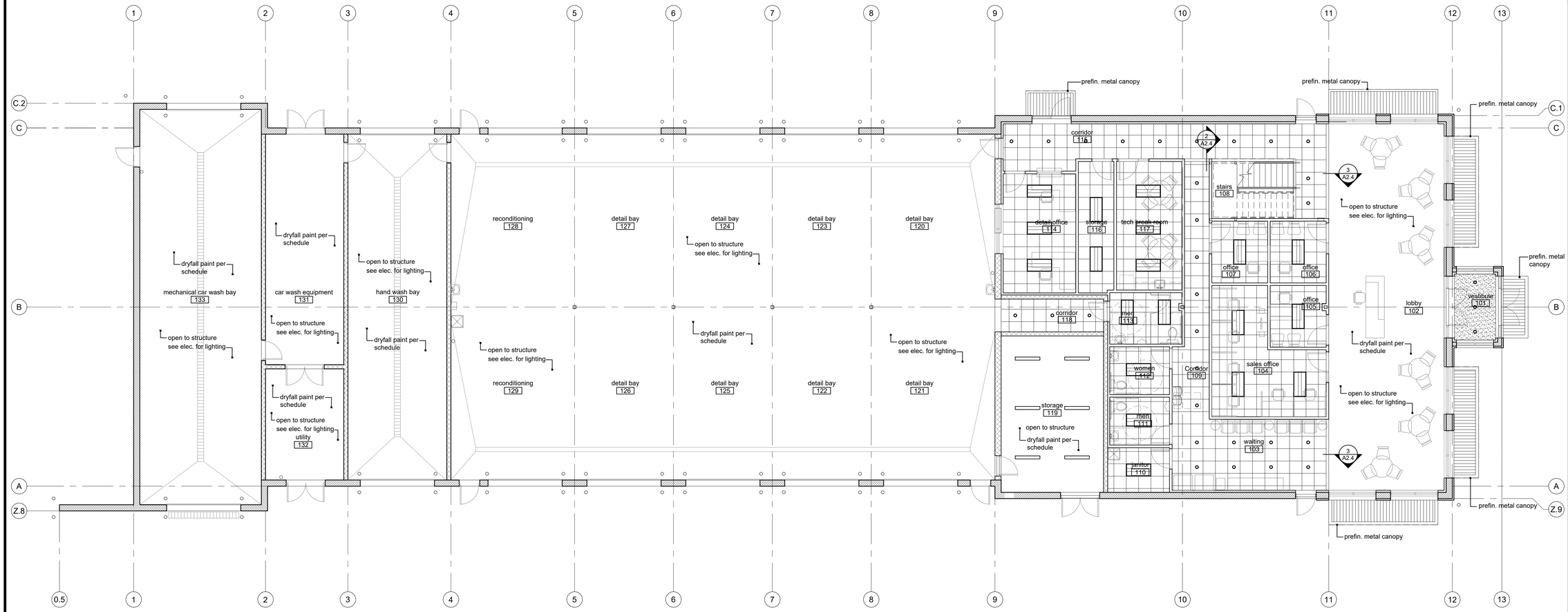
6 Roof Drain Detail
scale: NTS

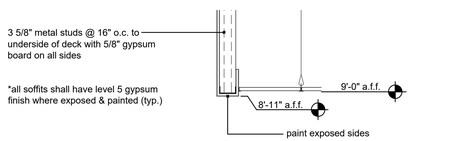


7 Ladder Detail
scale: NTS

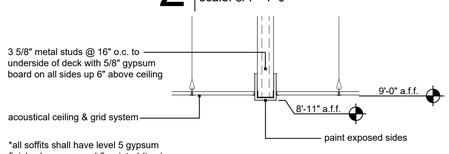


8 Parapet Ladder Detail
scale: 1" = 1'-0"





2 head detail
scale: 3/4"=1'-0"



3 head detail
scale: 3/4"=1'-0"

reflected ceiling notes:

1. Refer to general notes and specifications for more information.
2. Refer to engineering drawings for HVAC and electrical fixtures, specifications and details.
3. Refer to engineering drawings for emergency fixture locations and specifications.
4. Refer to engineering drawings for light fixture specifications.
5. All soffits and headers to be painted per finish schedule and reflected ceiling plan.
6. Acoustical ceiling tile and grid per room finish legend and reflected ceiling notes.

reflected ceiling legend:

- 2x4 lay-in LED light fixture with direct/indirect lens
- LED high bay light fixture
- recessed can LED light fixture
- 4'-0" long strip LED light fixture, hung from structure
- CLG-1: Armstrong, Fine Fissured, 1732, 24" x 24" x 5/8", with 15/16 angled tegular edge, white grid
- CLG-2: gypsum board ceiling, painted

1 First Floor Reflected Ceiling Plan
scale: 1/8" = 1'-0"

north

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STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-9508
REGISTERED ARCHITECT

02.22.2021

A New Facility for
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2100 NE Independence Ave
Lee's Summit, Missouri 64064

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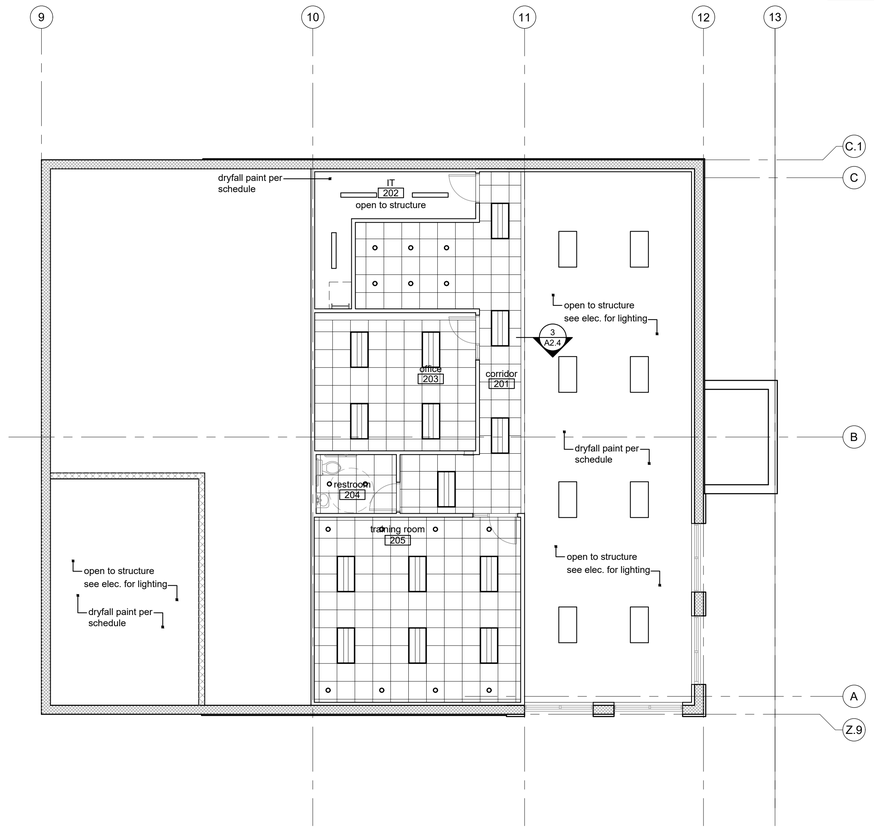

1 Mezzanine Reflected Ceiling Plan
scale: 1/8" = 1'-0"

north

reflected ceiling notes:

1. Refer to general notes and specifications for more information.
2. Refer to engineering drawings for HVAC and electrical fixtures, specifications and details.
3. Refer to engineering drawings for emergency fixture locations and specifications.
4. Refer to engineering drawings for light fixture specifications.
5. All soffits and headers to be painted per finish schedule and reflected ceiling plan.
6. Acoustical ceiling tile and grid per room finish legend and reflected ceiling notes.

reflected ceiling legend:

- 2x4 lay-in LED light fixture with direct/indirect lens
- LED high bay light fixture
- recessed can LED light fixture
- 4'-0" long strip LED light fixture, hung from structure
- CLG-1: Armstrong, Fine Fissured, 1732, 24" x 24" x 5/8", with 15/16 angled tegular edge, white grid
- CLG-2: gypsum board ceiling, painted

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STATE OF MISSOURI
POWELL EMERSON MINNIS NUMBER A-2006
REGISTERED ARCHITECT

02.22.2021

A New Facility for
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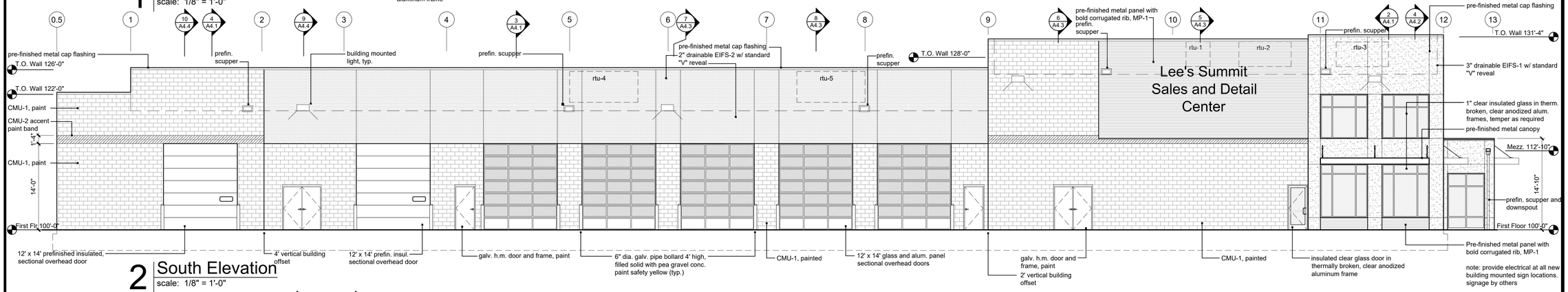
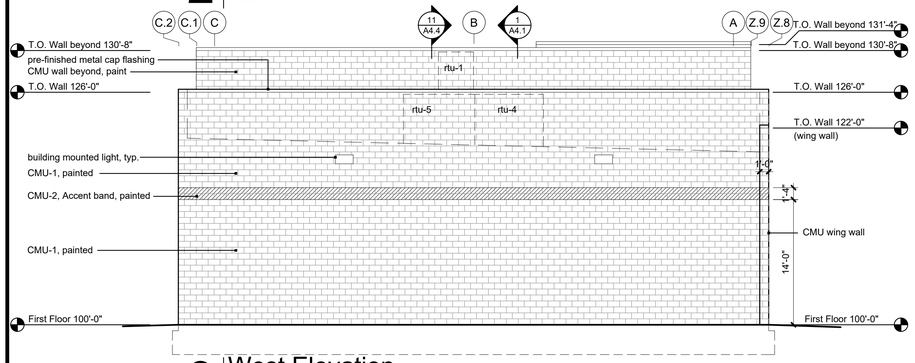
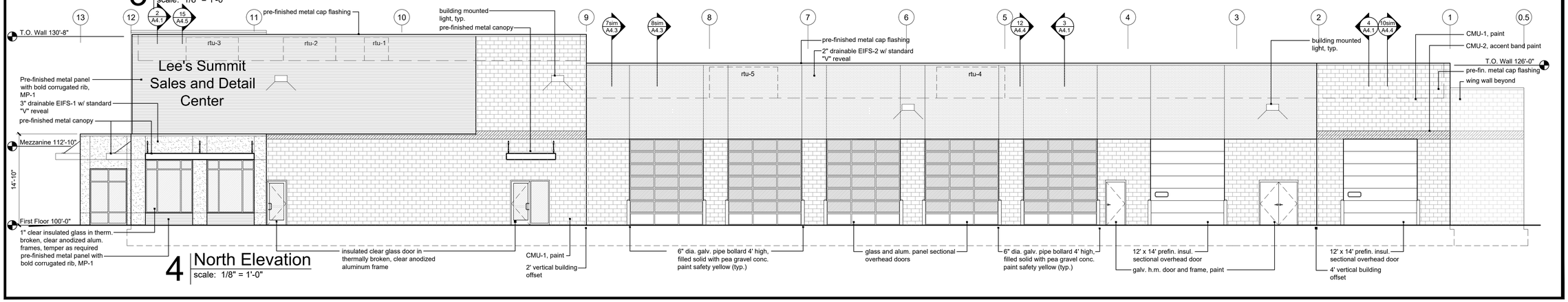
1 East Elevation
scale: 1/8" = 1'-0"



2 South Elevation
scale: 1/8" = 1'-0"



3 West Elevation
scale: 1/8" = 1'-0"



4 North Elevation
scale: 1/8" = 1'-0"

Exterior Materials and Colors:

EIFS-1
3" drainable EIFS system, fine finish with standard "V" groove
color: light gray (Sherwin Williams SW7064 Passive)

EIFS-2
2" drainable EIFS system, fine finish with standard "V" groove
color: medium gray (Sherwin Williams SW7066 Gray Matters)

CMU-1
smooth face exterior concrete masonry units, painted, color: Sherwin Williams SW7067 "Cityscape" w/ medium, 2 coat, textured paint system w/ primer. cmu and mortar shall include integral water repellant

CMU-2
smooth face exterior concrete masonry units, painted accent color: Sherwin Williams SW9177 "Salty Dog" w/ medium, 2 coat, textured paint system w/ primer. cmu and mortar shall include integral water repellant

MP-1
prefinished metal wall panel, MBCI 7.2 Panel, prefinished, bold corrugated rib color: silver metallic

storefront:
thermally broken anodized aluminum frame, color: clear

glass:
1 insulated clear glass with low-E coating and argon fill
*use SOLARBAN 60 as basis

F-1 flashing:
prefinished, color: silver metallic

caulk:
color to match adjacent walls

exterior hollow metal doors, frames, trash enclosure gates:
paint to Sherwin Williams SW7067 "Cityscape", Pro Industrial High Performance Epoxy, semi-gloss, (1 coat primer, 2 coats paint to cover)

bollards:
galvanized, paint safety yellow

overhead doors:
pefinished to match EIFS-2

prefinished metal canopies:
pre-finished Super Lumideck Flat Soffit Canopy, Mapes, color: Interstate Blue

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STATE OF MISSOURI
SHANE POWELL
EMERSON MINNIS
NUMBER A-9998
REGISTERED ARCHITECT

02.22.2021

A New Facility for Automotive Sales & Detail Center

2100 NE Independence Ave
Lee's Summit, Missouri 64064

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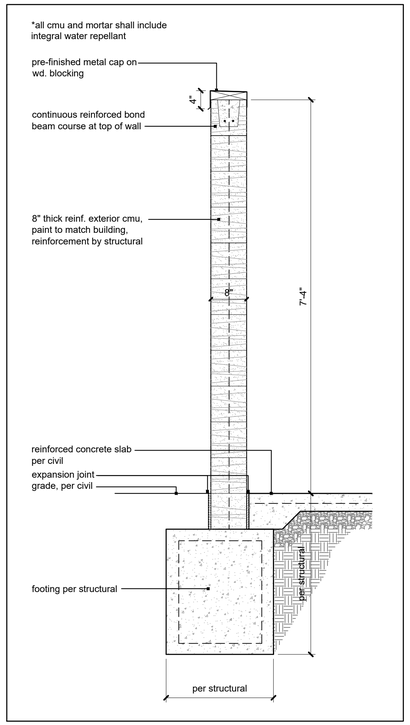
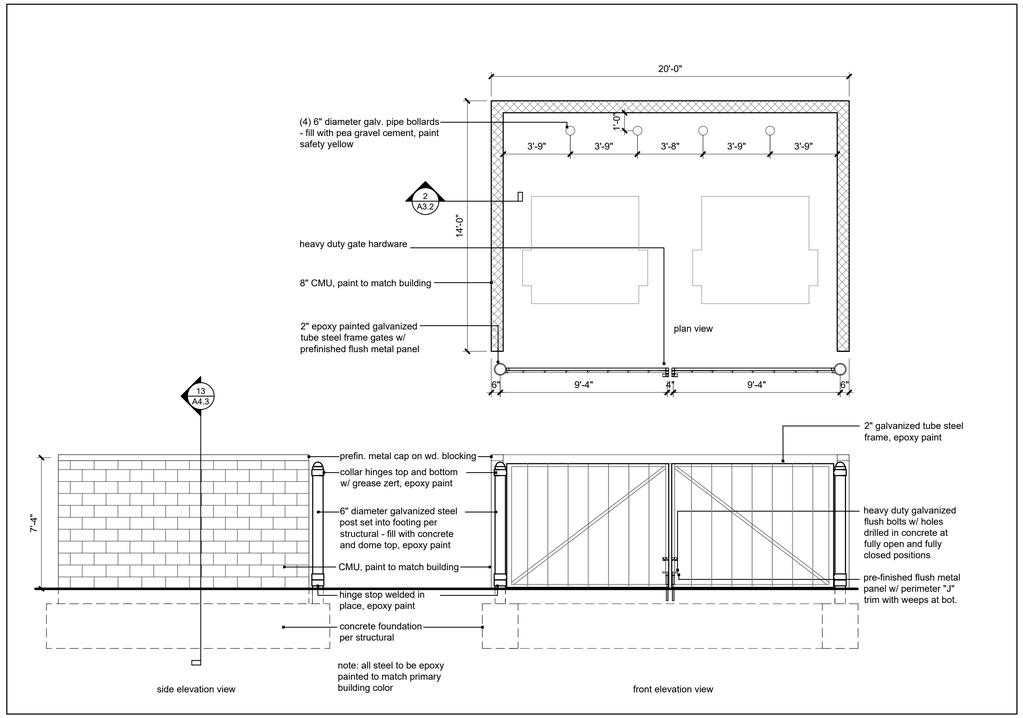


2 Section @ Trash Encl.
scale 3/4" = 1'-0"



1 Trash Enclosure
scale: 1/4" = 1'-0"

Details & Detail Center

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2100 NE Independence Ave
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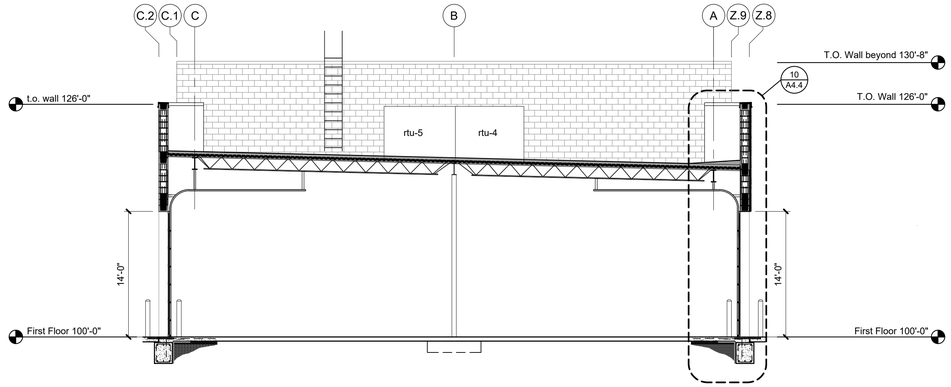

4 Building Section
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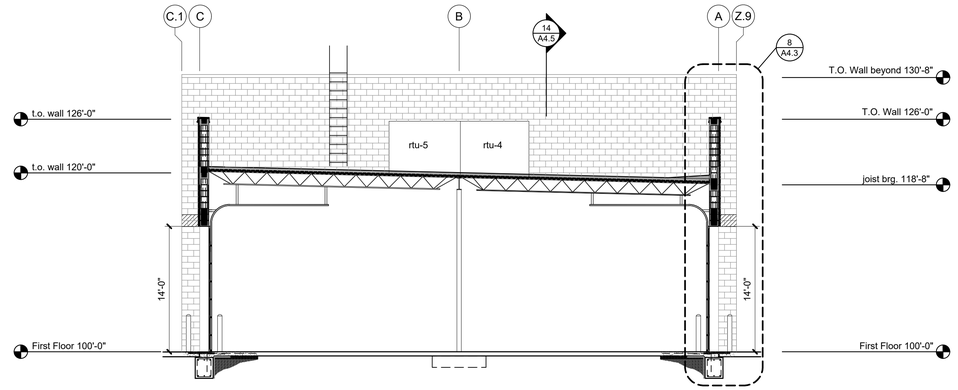

3 Building Section
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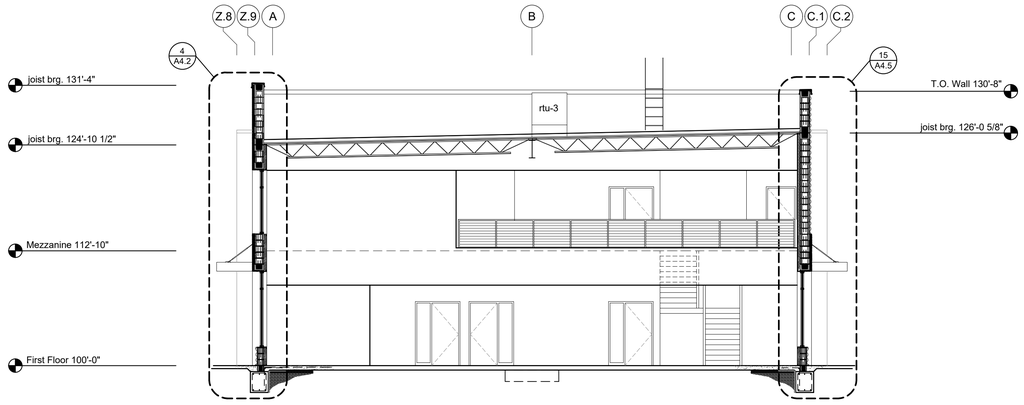

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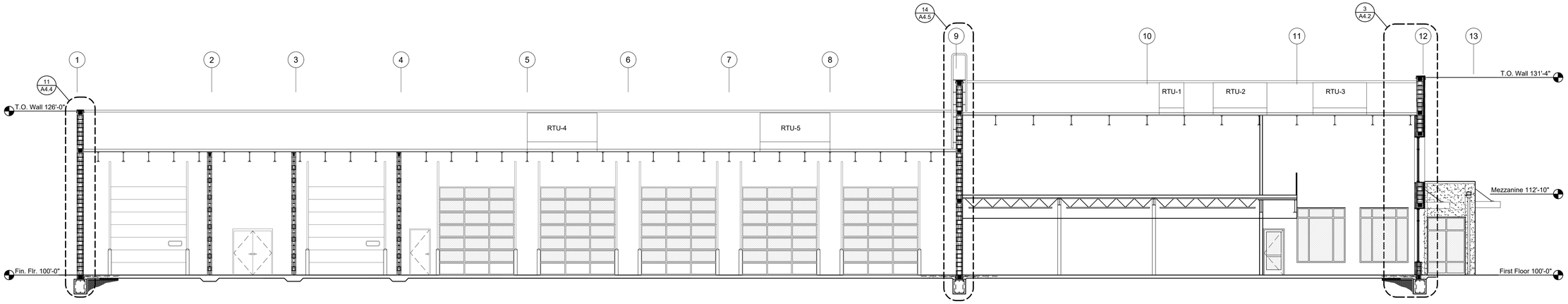

1 Building Section
scale: 1/8" = 1'-0"

STATE OF MISSOURI
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02.22.2021

Automotive Sales & Detail Center

A New Facility for

2100 NE Independence Ave
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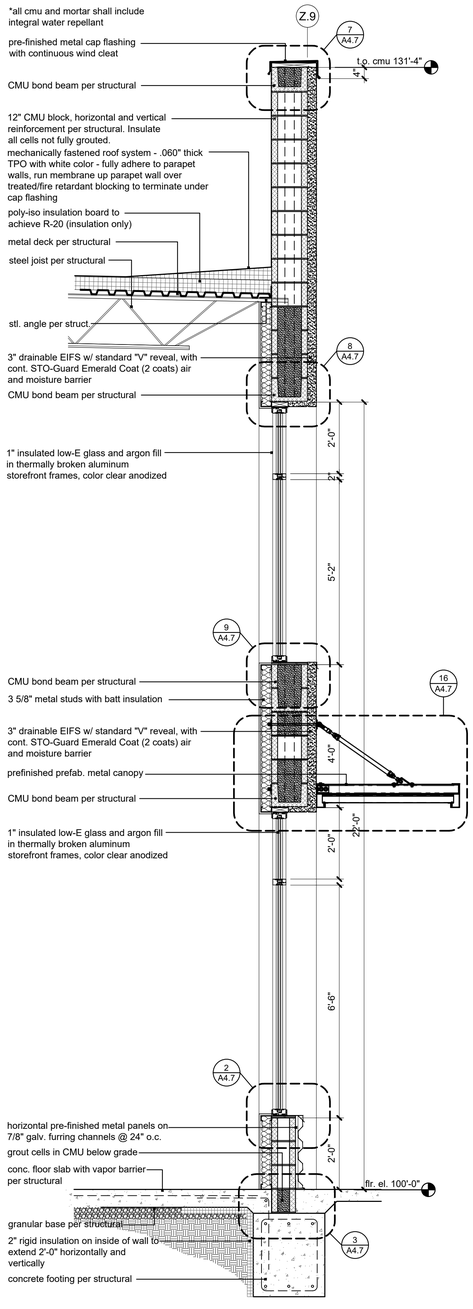

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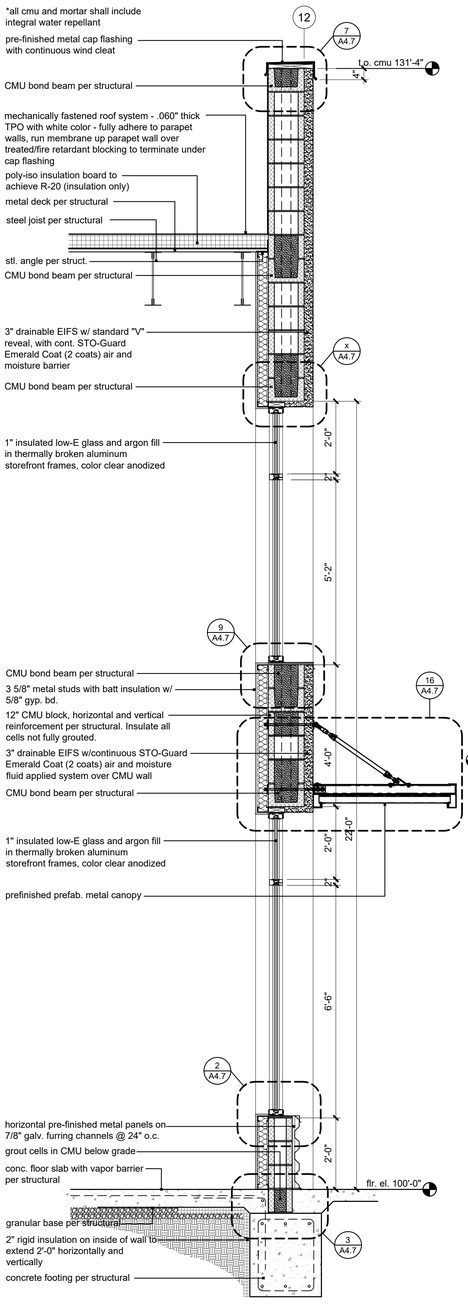

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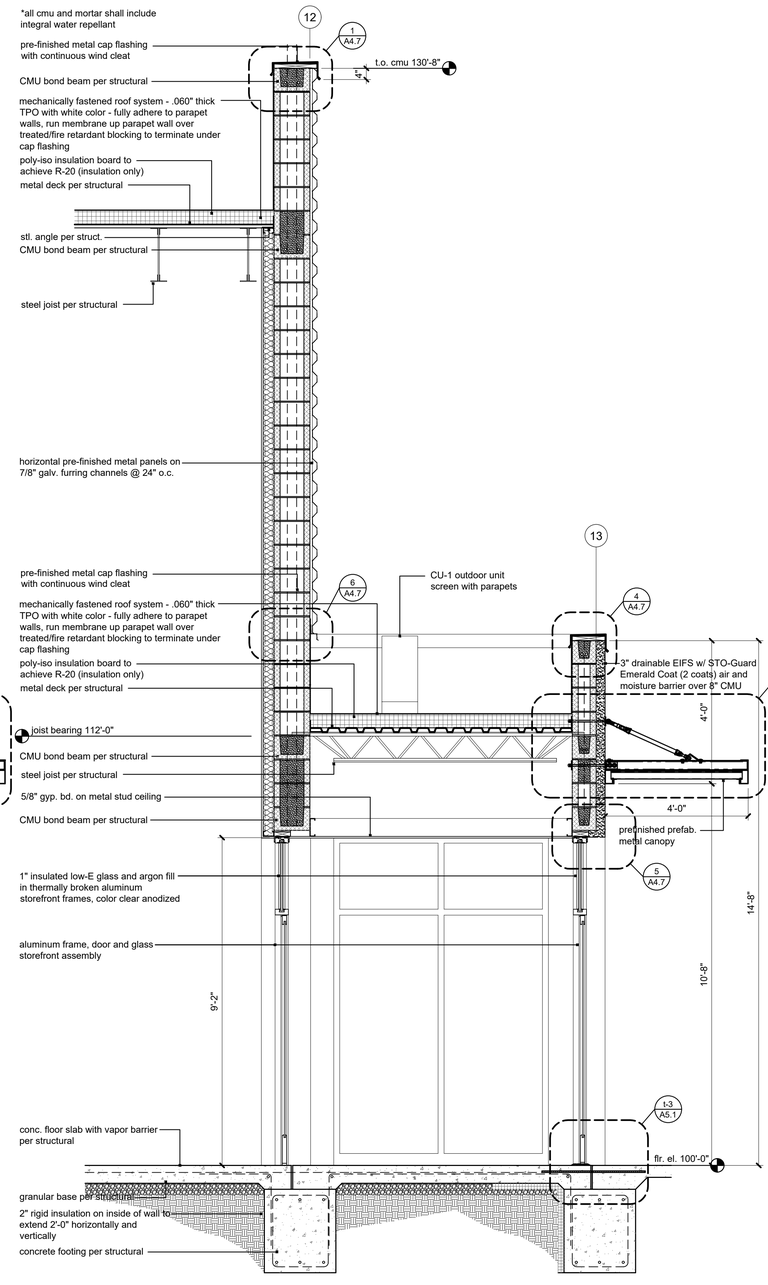

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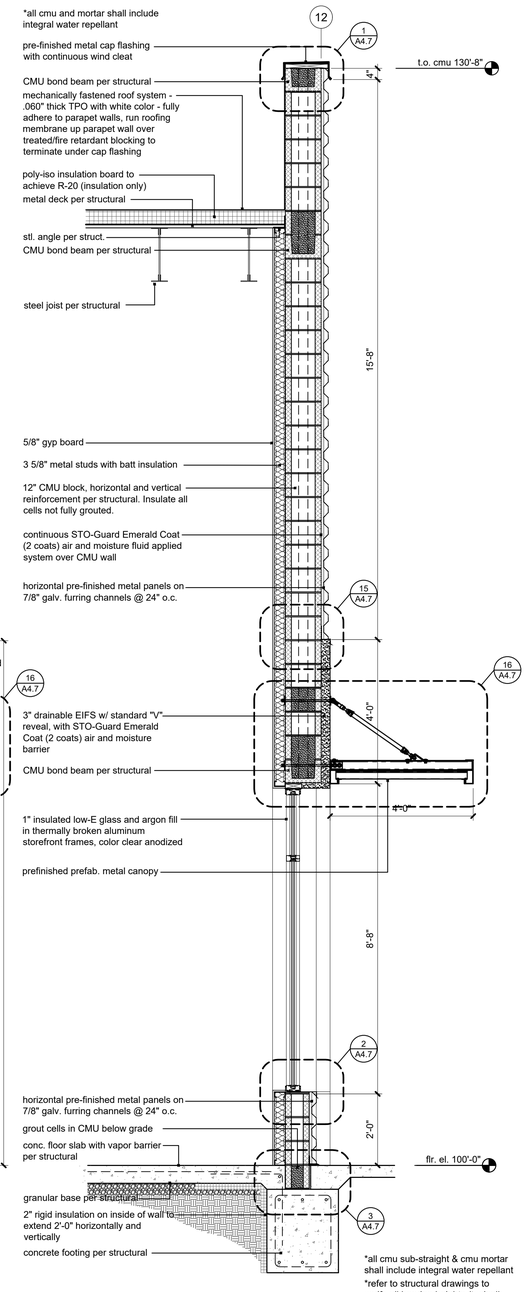

*all cmu sub-straight & cmu mortar shall include integral water repellant
*refer to structural drawings to verify all bearing heights (typical)

1 Wall Section
scale: 1/2" = 1'-0"

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STATE OF MISSOURI
POWELL EMERSON MINNIS NUMBER ANDREW
REGISTERED ARCHITECT

02.22.2021

Elevations & Detail Center

A New Facility for
Automotive Sales

2100 NE Independence Ave
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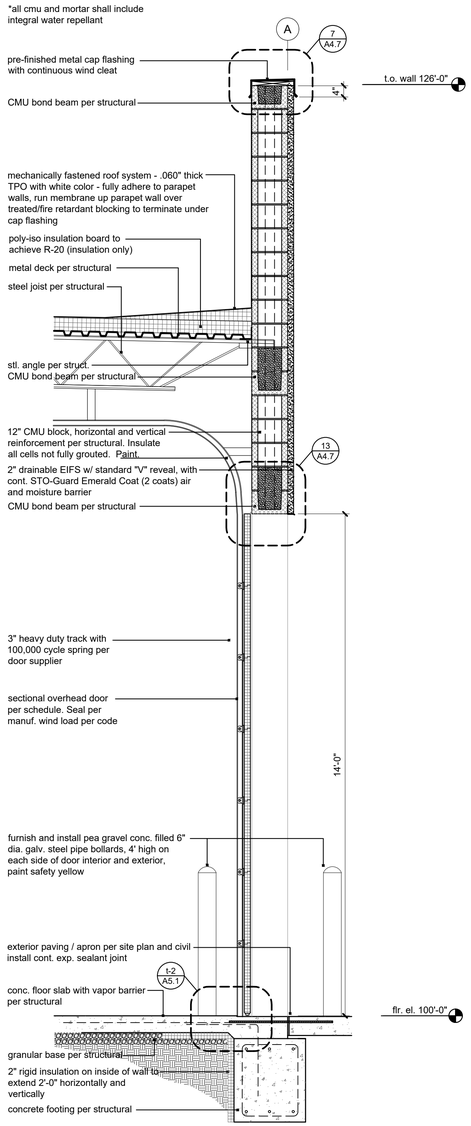

8 | Wall Section
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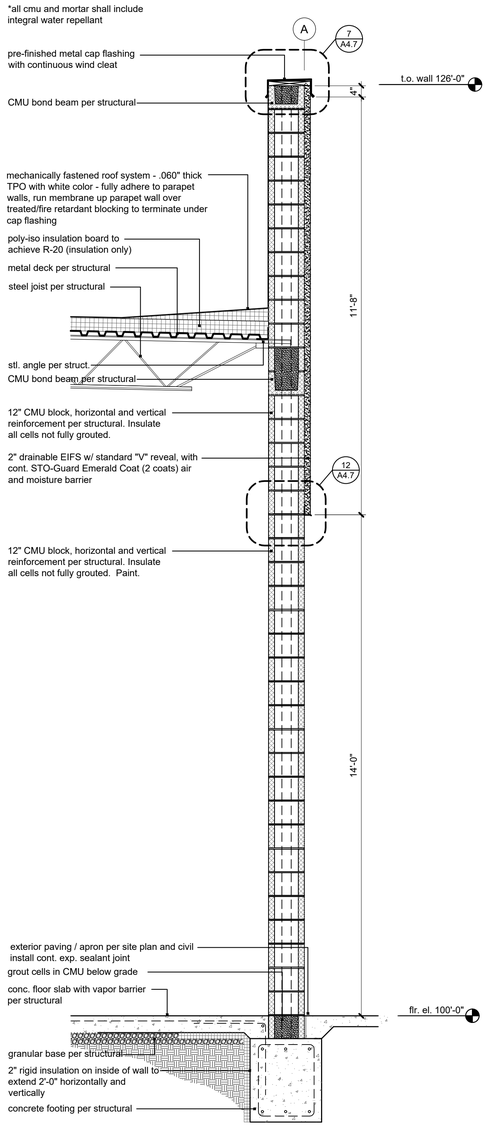

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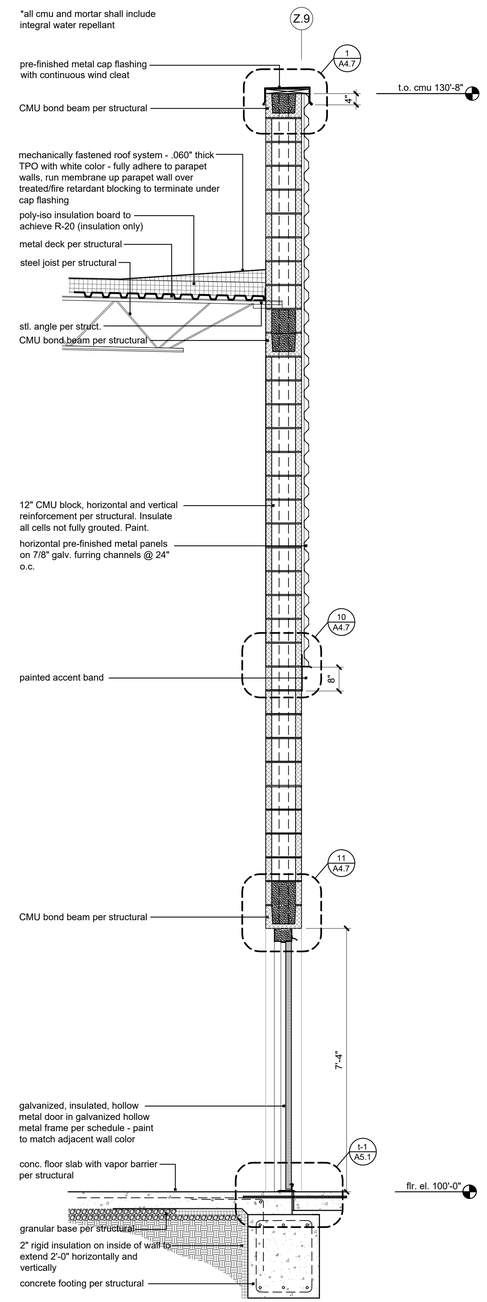

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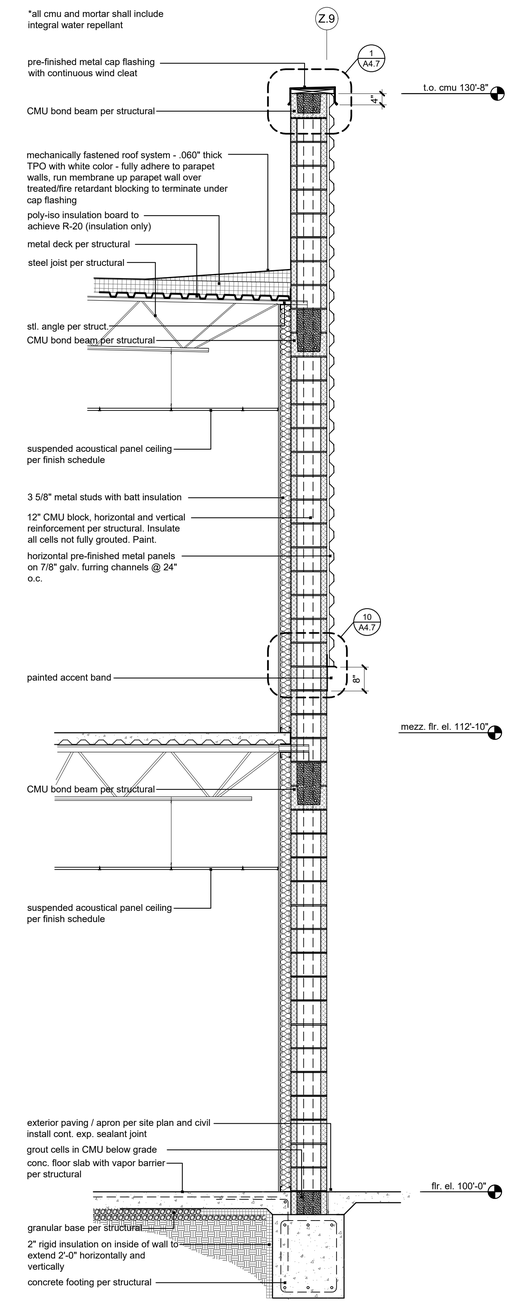

5 | Wall Section
scale: 1/2" = 1'-0"

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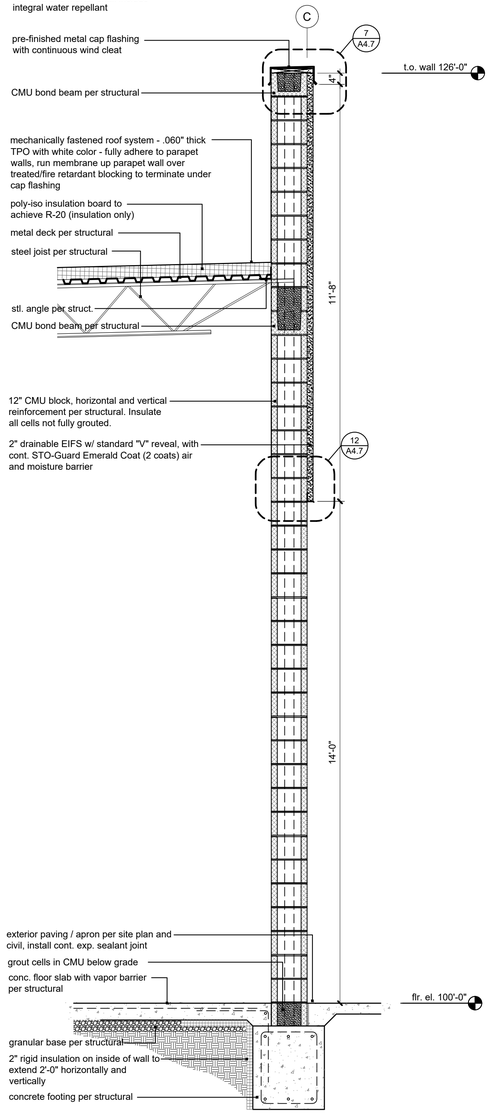
STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-2009
REGISTERED ARCHITECT

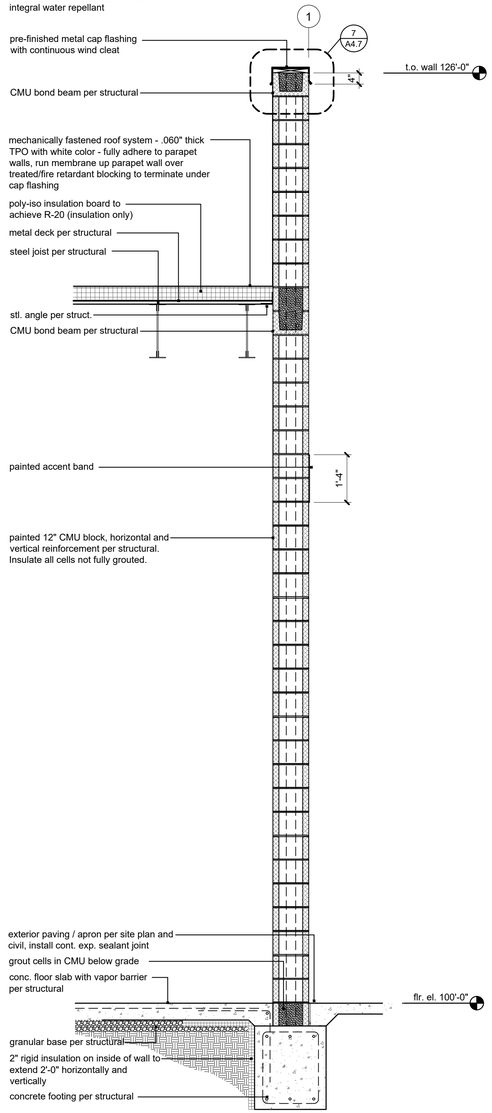
02.22.2021

*all cmu and mortar shall include integral water repellant



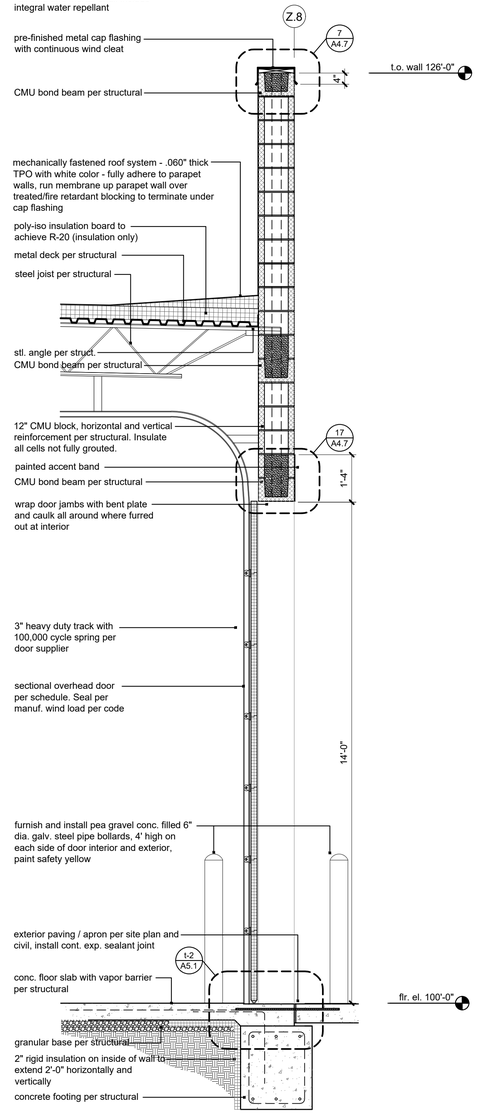
12 Wall Section
scale: 1/2" = 1'-0"

*all cmu and mortar shall include integral water repellant



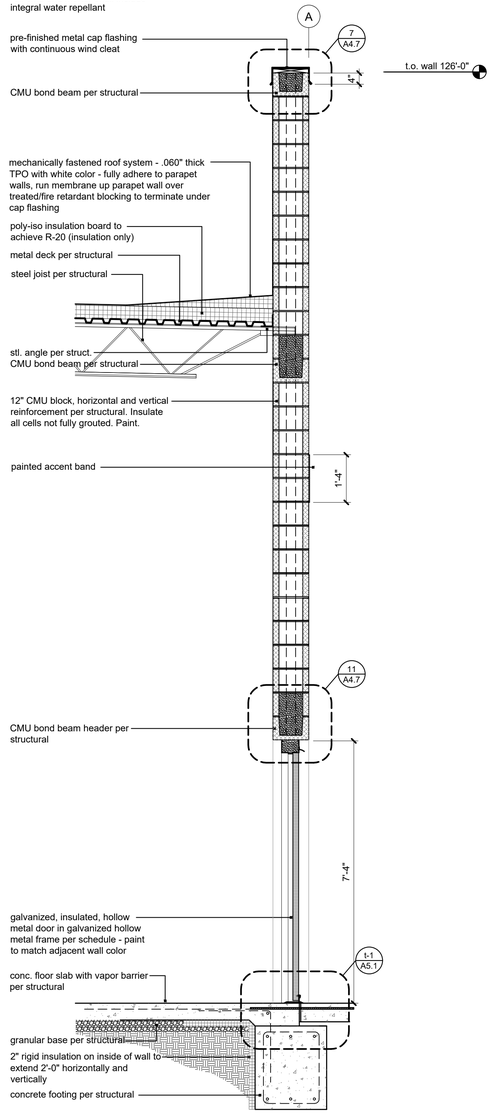
11 Wall Section
scale: 1/2" = 1'-0"

*all cmu and mortar shall include integral water repellant



10 Wall Section
scale: 1/2" = 1'-0"

*all cmu and mortar shall include integral water repellant



9 Wall Section
scale: 1/2" = 1'-0"

A New Facility for
Automotive Sales & Detail Center
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.22.2021
drawn by
DAE
checked by
DAE
revisions

sheet number
A4.4
drawing type
permit
project number
19076

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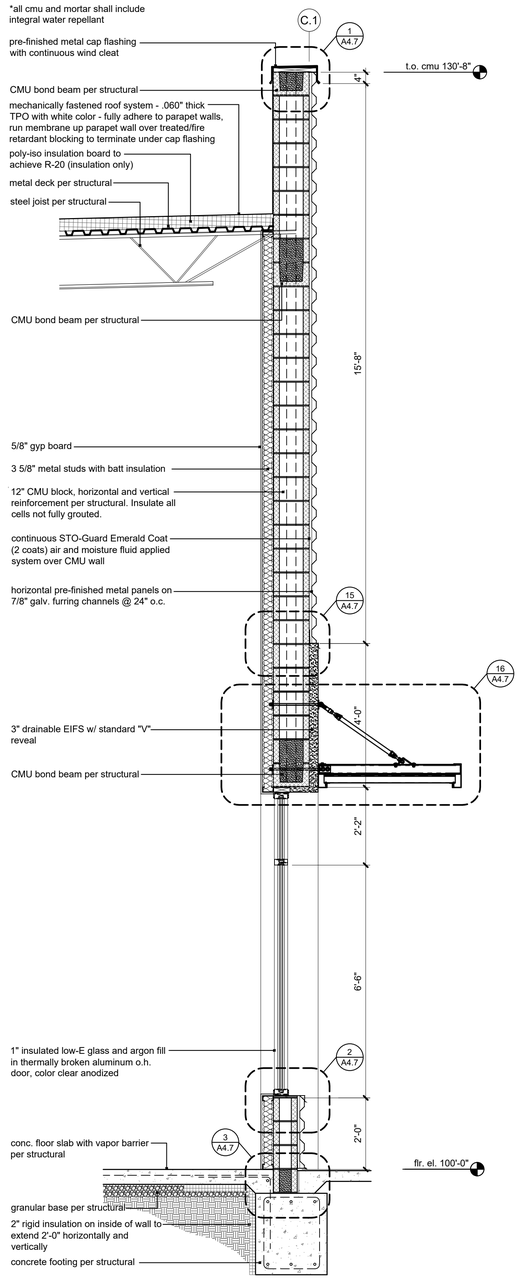
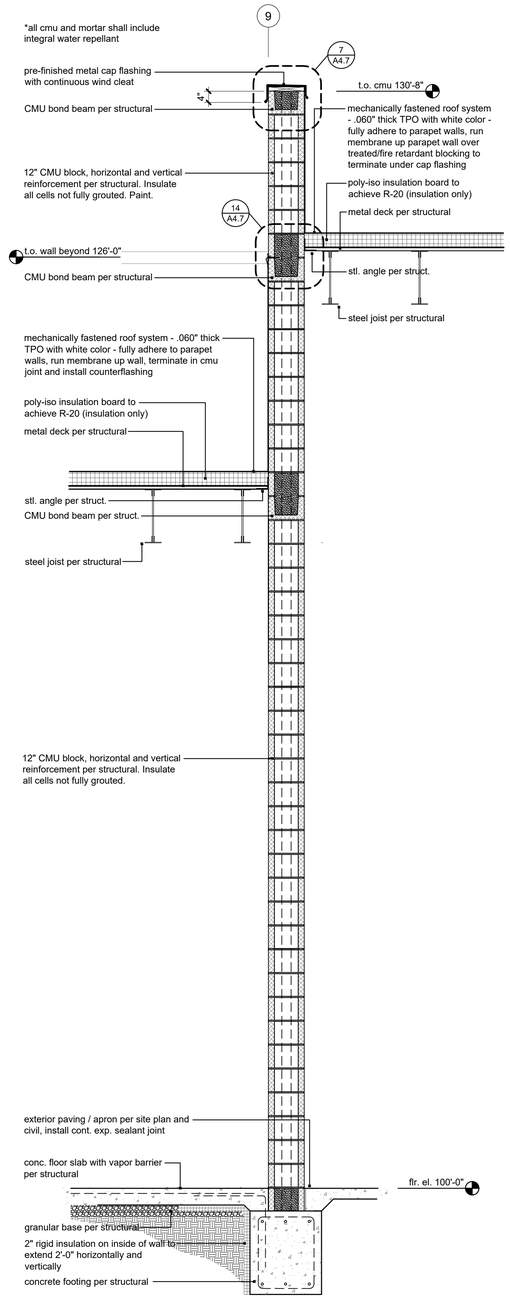
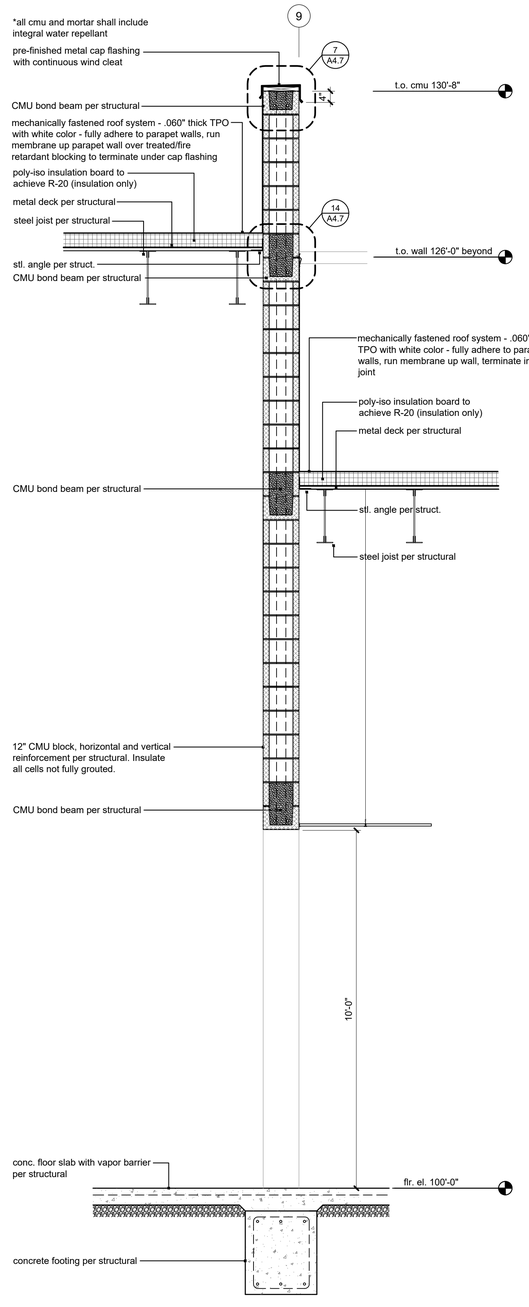


15 Wall Section
scale: 1/2" = 1'-0"



14 Wall Section
scale: 1/2" = 1'-0"



13 Wall Section
scale: 1/2" = 1'-0"

STATE OF MISSOURI
POWELL
EMERSON
MINNIS
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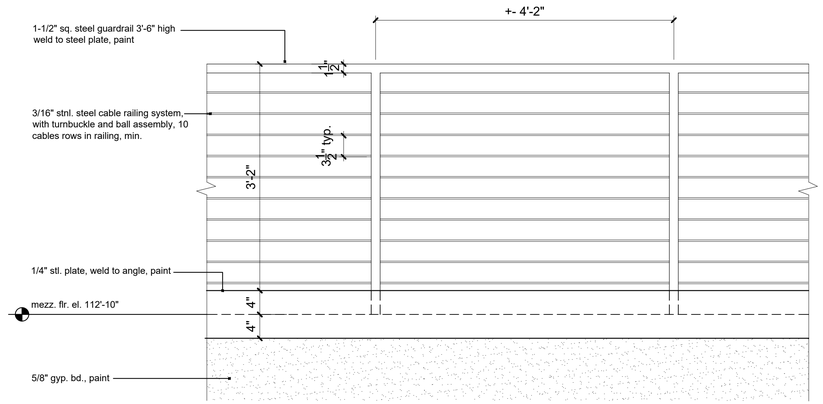
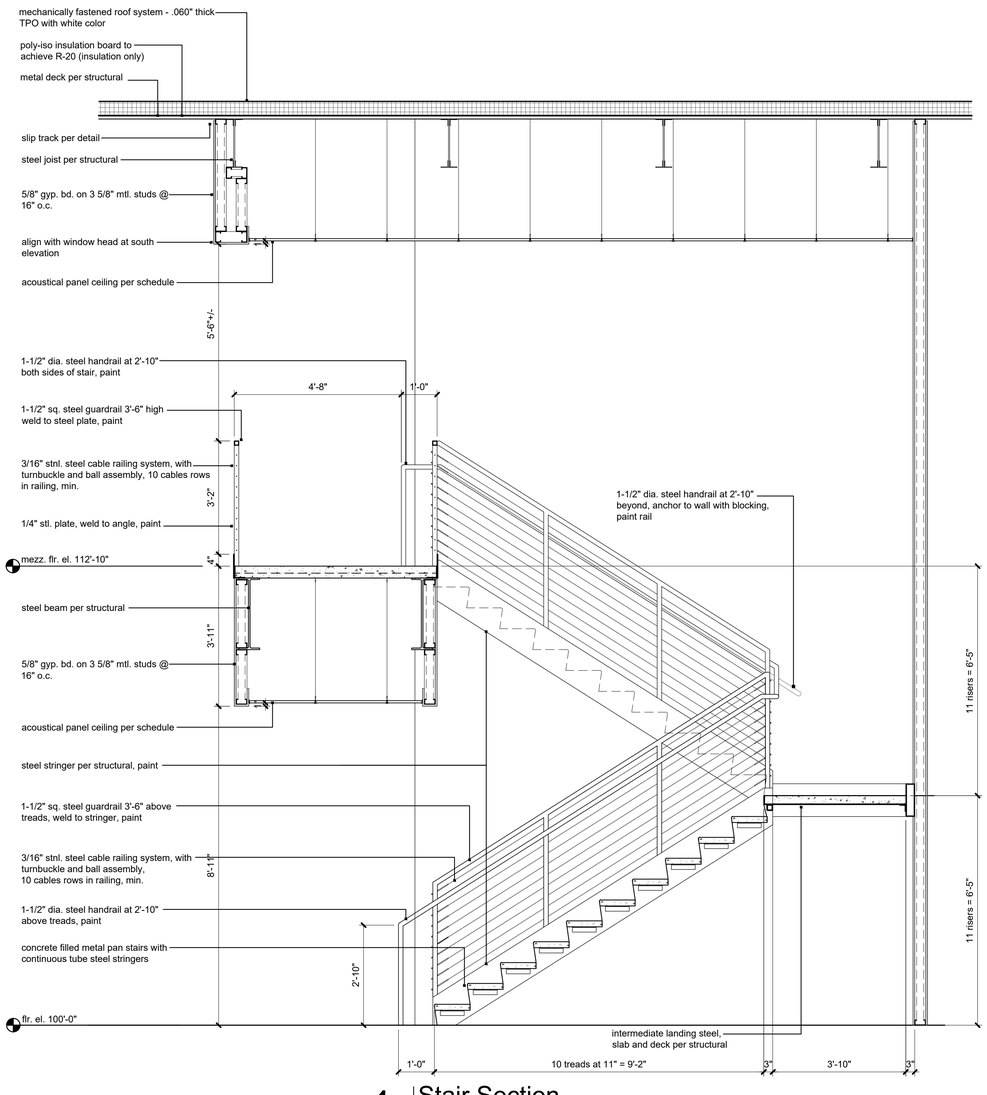


2 Railing Elevation
scale: 1" = 1'-0"



1 Stair Section
scale: 1/2" = 1'-0"

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STATE OF MISSOURI
POWELL EMERSON MINNIS NUMBER A-6886
REGISTERED ARCHITECT

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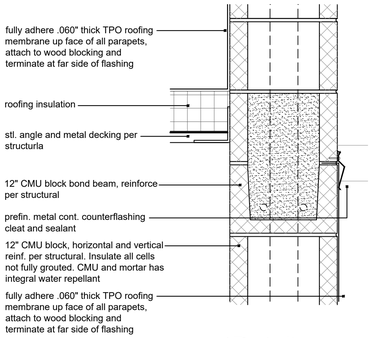
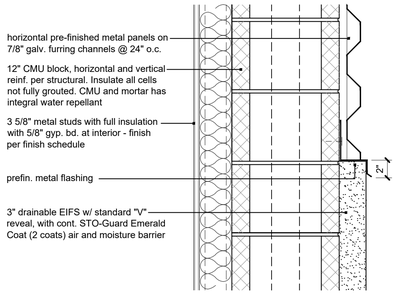
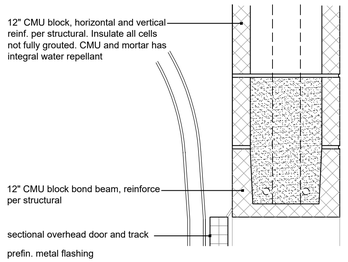


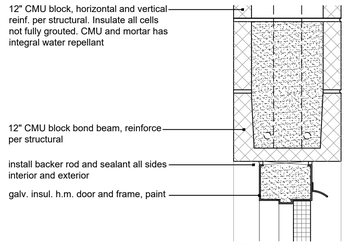
14 Detail
scale: 1 1/2" = 1'-0"



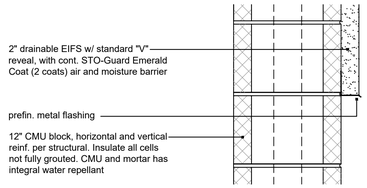
15 Detail
scale: 1 1/2" = 1'-0"



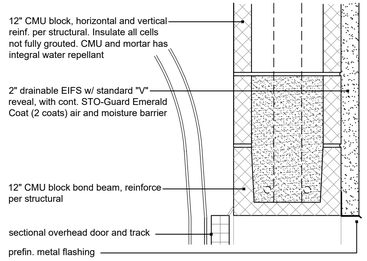
17 Detail
scale: 1 1/2" = 1'-0"



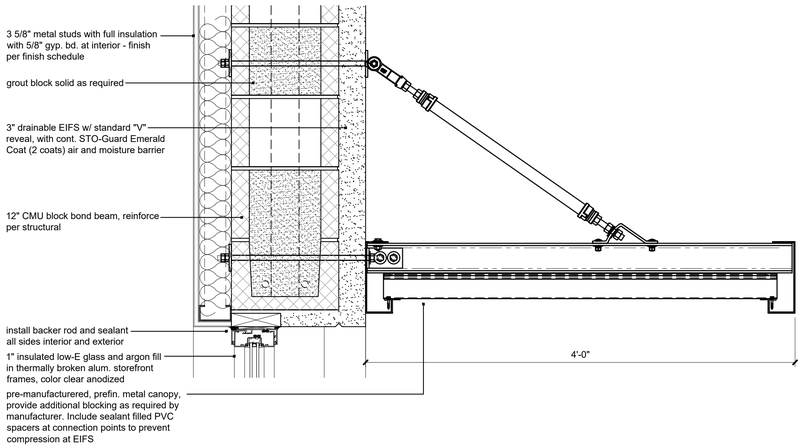
11 Detail
scale: 1 1/2" = 1'-0"



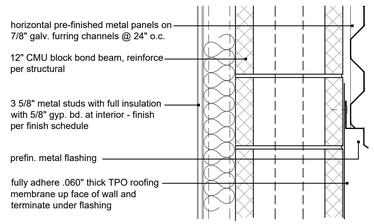
12 Detail
scale: 1 1/2" = 1'-0"



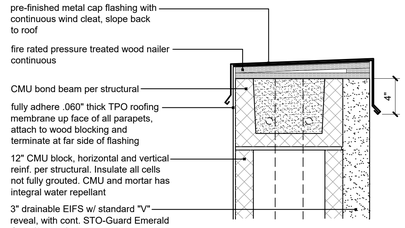
13 Detail
scale: 1 1/2" = 1'-0"



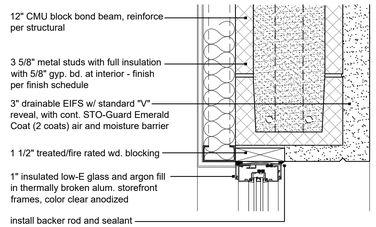
16 Detail
scale: 1 1/2" = 1'-0"



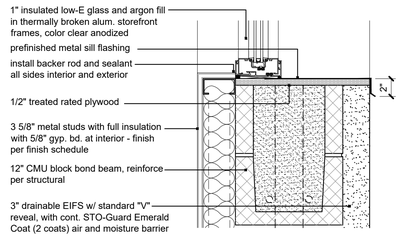
6 Detail
scale: 1 1/2" = 1'-0"



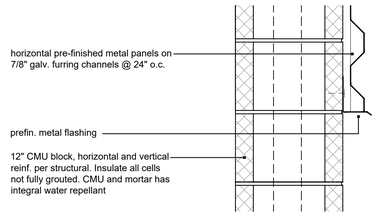
7 Detail
scale: 1 1/2" = 1'-0"



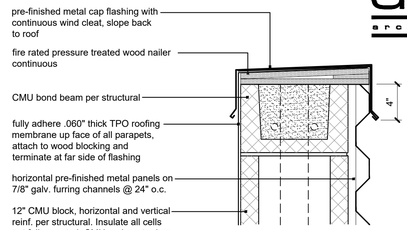
8 Detail
scale: 1 1/2" = 1'-0"



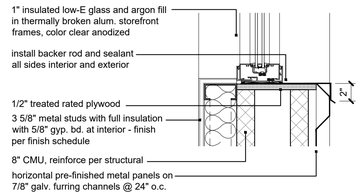
9 Detail
scale: 1 1/2" = 1'-0"



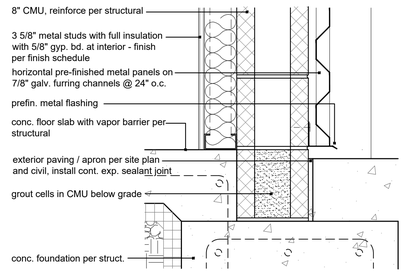
10 Detail
scale: 1 1/2" = 1'-0"



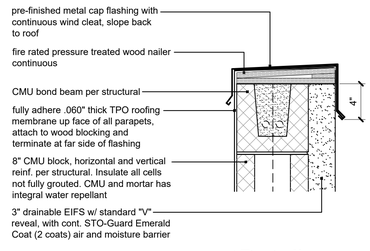
1 Detail
scale: 1 1/2" = 1'-0"



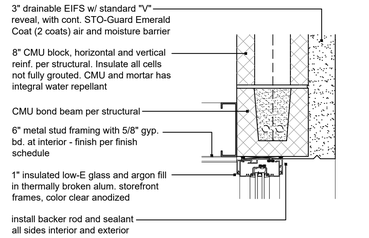
2 Detail
scale: 1 1/2" = 1'-0"



3 Detail
scale: 1 1/2" = 1'-0"



4 Detail
scale: 1 1/2" = 1'-0"



5 Detail
scale: 1 1/2" = 1'-0"

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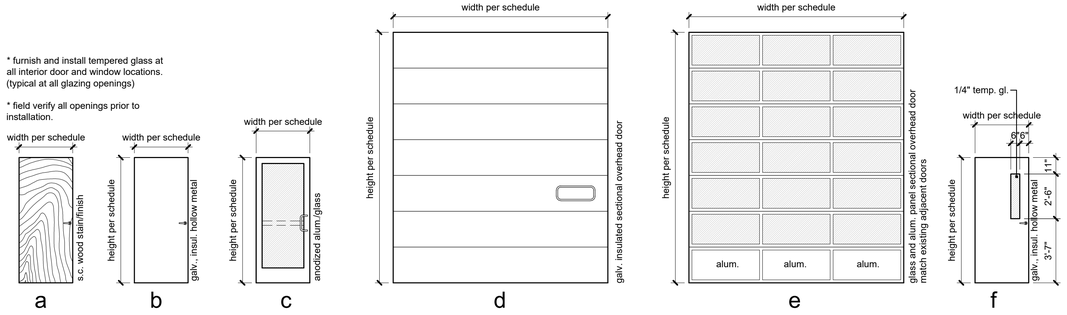
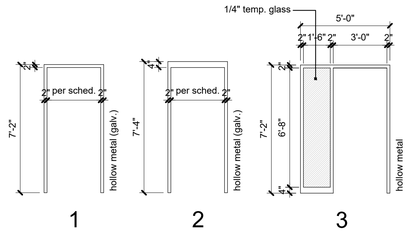
* furnish and install tempered glass at all interior door and window locations. (typical at all glazing openings)

* field verify all openings prior to installation.



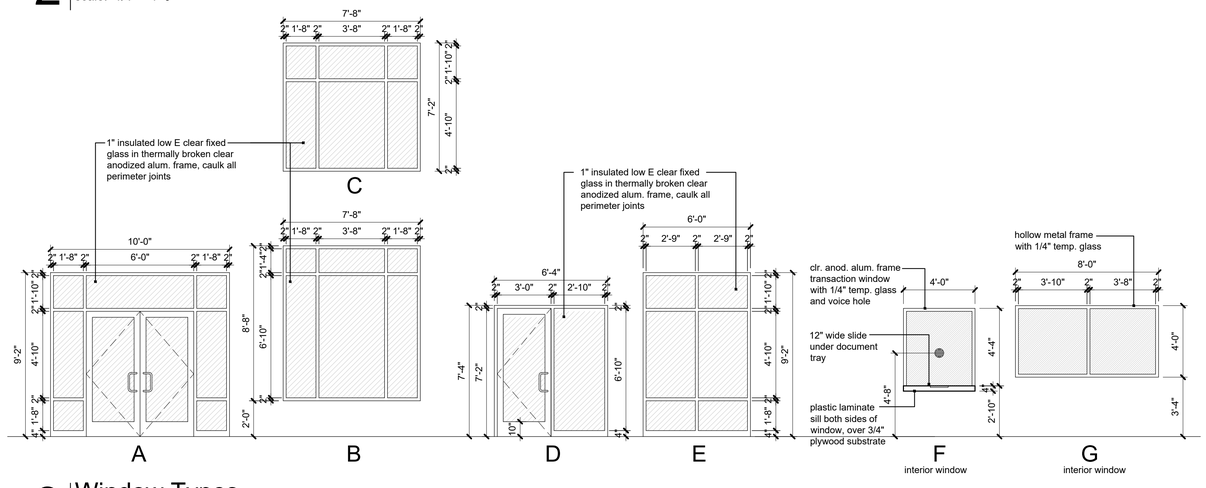
1 Door Types

scale: 1/4" = 1'-0"



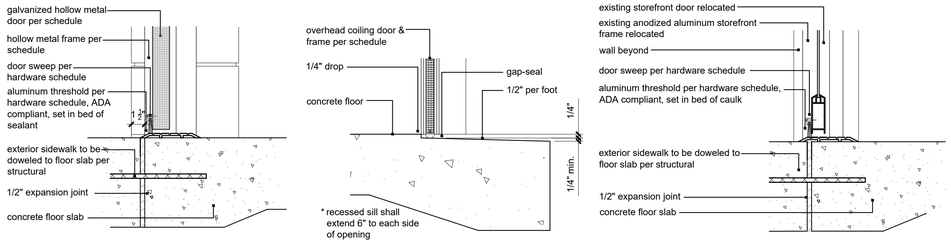
2 Frame Types

scale: 1/4" = 1'-0"



3 Window Types

scale: 1/4" = 1'-0"



4 Threshold Types

scale: 1 1/2" = 1'-0"

door & hardware notes:

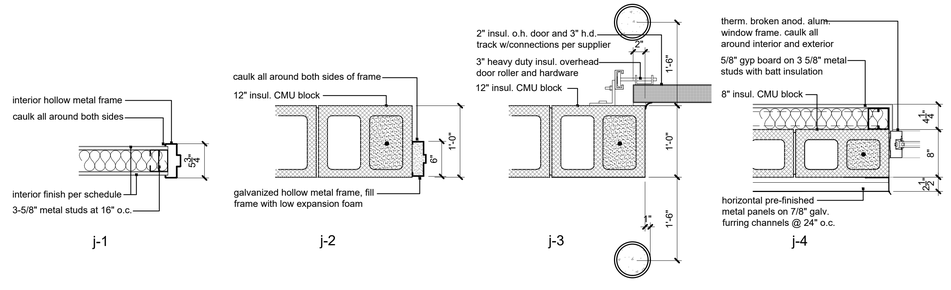
- Door frames shall be 16 ga. with mitered and welded corners.
- All hinges at exterior doors shall have non-removable pins.
- Doors with closers shall have ball bearing hinges.
- Wood doors shall be solid core wood, plain sliced red oak "select" and "clear". Stain to match sample.
- Thresholds shall coordinate with adjacent floor finish at either side.
- Hardware shall be heavy-duty, commercial grade, level 1 with lever handle.
- Hardware shall be manufactured by Schlage or approved equal.
- Finish hardware shall meet article III of the ADA.
- Keying shall be coordinated with owner prior to order of hardware.
- All interior storefront systems shall be clear anodized aluminum finish.
- All hardware sets shall be fitted with Schlage "C" keyway compatible cylinders - 6 pin - "0" bit. and shall have interchangeable cores.
- All hollow metal door frames shall be caulked around entire perimeter and at the inside corners.
- All exterior hollow metal doors shall include a rain guard.
- All overhead doors shall have 3" tracks, 100,000 cycle spring counterbalance.

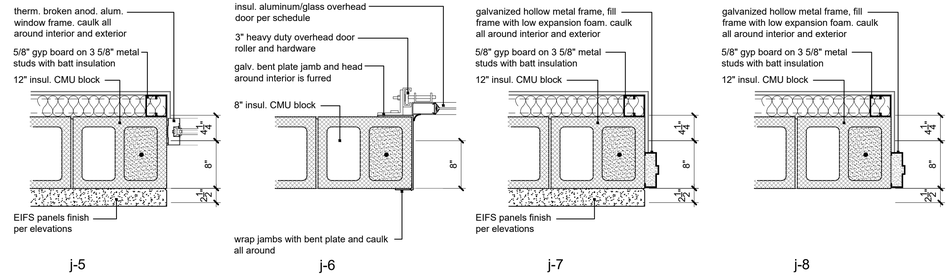
glazing notes:

- Furnish and install tempered glass at all doors and at a minimum of 24" either side of doors to a minimum height of 60". Tempered glass shall also be installed at all glass within 18" of finish floor or adjacent to sidewalk areas. (typical at all glazing locations)
- Tempered glass shall conform to safety glazing in hazardous locations requirements as outlined per 2012 IBC; 2406 and 2406.3
- Field verify all openings prior to installation.

door schedule

door #	doors						frames						fire rating	hardware group	access control	remarks
	type	mat.	finish	size: width	size: height	size: thick	type	material	finish	details: head	details: jamb	details: sill				
01	C	alum./gl.	clr.anod.	pr. 3'-0"	7'-0"	1 3/4"	1	alum.	clr. anod.	"	-	t-3	-	1	-	
02	C	alum./gl.	clr.anod.	pr. 3'-0"	7'-0"	1 3/4"	1	alum.	clr. anod.	"	-	t-3	-	3	-	
03	C	alum./gl.	clr.anod.	3'-0"	7'-2"	1 3/4"	1	alum.	clr. anod.	"	-	t-3	-	2	-	
04	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	"	j-1	-	-	7	-	
05	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	"	j-1	-	-	7	-	
06	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	"	j-1	-	-	7	-	
07	C	alum./gl.	clr.anod.	3'-0"	7'-2"	1 3/4"	1	alum.	clr. anod.	"	-	t-3	-	2	-	
08	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint	"	j-1	-	-	8	-	
09	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint	"	j-1	-	-	9	-	
10	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint	"	j-1	"	-	9	-	
11	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	"	j-1	"	-	7	-	
12	C	alum./gl.	clr.anod.	3'-0"	7'-2"	1 3/4"	1	alum.	clr. anod.		"	t-3	-	2	-	
13	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	"	j-1	-	-	7	-	
14	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint		j-1	-	-	8	-	
15	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint		j-1	-	-	7	-	
16	F	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-8	-	-	11	-	
17	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
18	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
19	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
20	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
21	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
22	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-2	t-1	-	4	-	
23	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	-	-	8	-	
24	D	insul. stl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-3	t-2	-	-	-	
25	B	insul. stl.	paint	3-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-2	-	-	8	-	
26	B	galv.h.m.	prefin.	pr. 3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	t-1	-	5	-	
27	D	insul. stl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-3	t-2	-	-	-	
28	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-2	t-1	-	4	-	
29	D	insul. stl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-3	t-2	-	-	-	
30	B	insul. stl.	paint	3-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-2	-	-	8	-	
31	B	galv.h.m.	prefin.	pr. 3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	t-1	-	5	-	
32	B	galv.h.m.	prefin.	pr. 3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	-	-	6	-	
33	D	insul. stl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-3	t-2	-	"	-	
34	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-2	t-1	-	4	-	
35	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	"	-	
36	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
37	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
38	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
39	E	alum./gl.	prefin.	12'-0"	14'-0"	2"	-	-	-	"	j-6	t-2	-	-	-	
40	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	h.m.	paint	"	j-2	t-1	-	4	-	
41	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	-	-	8	-	
42	B	galv.h.m.	prefin.	pr. 3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	t-1	-	5	-	
43	B	insul. stl.	paint	3'-0"	7'-0"	1 3/4"	2	galv. mtl.	paint	"	j-2	-	-	10	-	
201	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint	"	j-1	"	-	8	-	
202	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	"	j-1	"	-	7	-	
203	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	1	h.m.	paint	"	j-1	-	-	9	-	
204	A	s.c. wood	stain/finish	3'-0"	7'-0"	1 3/4"	3	h.m.	paint	-	j-1	-	-	7	-	





5 Jamb Types

scale: 1" = 1'-0"

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STATE OF MISSOURI
POWELL
EMERSON
MINNIS
NUMBER
A-6369
REGISTERED ARCHITECT

02.22.2021

A New Facility for

Automotive Sales & Detail Center

2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.22.2021
drawn by
DAE
checked by
DAE
revisions

sheet number
A5.1
drawing type
permit
project number
19076

finish legend

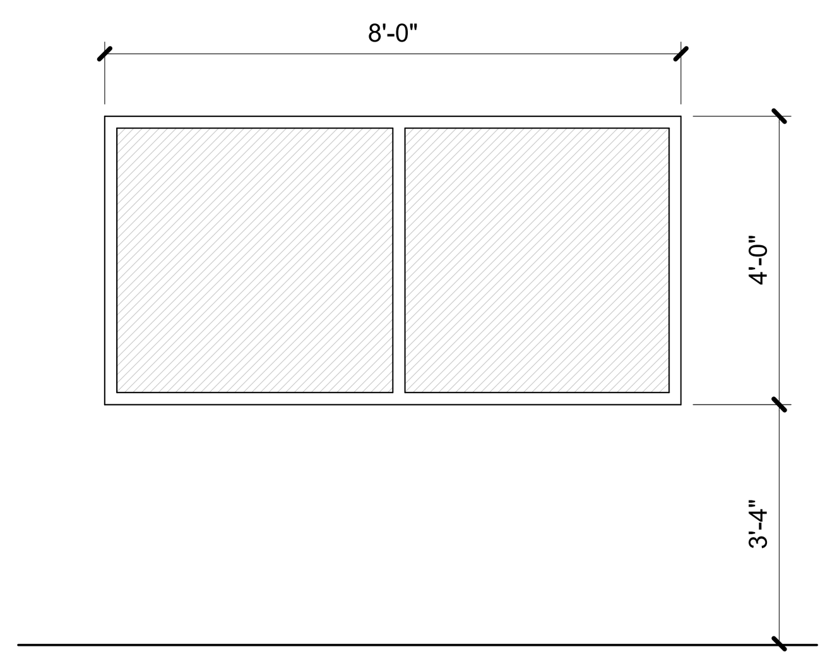
sc	sealed concrete with clear Ashford sealer 2 coats - concrete floors to be free of bumps, pits, scrapes, etc.
ef-1	epoxy flooring
b-1	standard cove 4" vinyl base, Roppe, color: TBD
ct-1	ceramic tile flooring, Premier Tile, Interceramic - Wilshire, color: Ash, finish: matte (contact Mariana Eastham at Mariana.Eastham@jaeckledistributors.com or 913.484.2691 for pricing and ordering)
ct-2	ceramic tile flooring, Premier Tile, Interceramic - Wilshire, color: Ash, finish: polished (contact Mariana Eastham at Mariana.Eastham@jaeckledistributors.com or 913.484.2691 for pricing and ordering)
cwt-1	ceramic wall tile, Interceramic, Seaside color: Glossy Blue (contact Mariana Eastham at Mariana.Eastham@jaeckledistributors.com or 913.484.2691 for pricing and ordering)
cpt-1	carpet tile, J+J flooring, collection: Schematic, color: Template, 24"x24" tile, install pattern: brick (contact Elizabeth Lester at elizabeth.lester@jjflooring.com or 816.605.3351 for pricing and ordering)
lvt-1	luxury vinyl tile, Patcraft, collection: Set in Concrete - Aggregate, color: Fragment, 24"x24" tile, install pattern: ashlar (contact .com or for pricing and ordering)
pt-1	wall paint, sherwin williams, ProMar 200 Zero VOC Interior Latex Paint, color: SW7661 Reflection (1 coat primer, 2 coats paint - to cover) - level 4 finish
pt-2	wall paint, sherwin williams, color: SW7663 Monorail Silver (1 coat primer, 2 coats paint - to cover) - level 4 finish
pt-3	restroom wall paint, sherwin williams, Pro Industrical Pre-Catalyzed Waterbased Epoxy, color: SW6232 Misty (1 coat primer, 2 coats paint - to cover)
pt-4	ceiling dryfall paint, sherwin williams, Low VOC Waterborne Acrylic Dryfall, color: SW7009 Pearly White (1 coat primer, 2 coats paint - to cover) - level 5 finish
pt-5	trim paint, sherwin williams, ProMar 200 Alkyd Paint color: TBD, premium grade latex semi-gloss enamel, (1 coat primer, 2 coats paint - to cover) - for all hollow metal door frames - level 4 finish
pt-6	exterior metal, Pro Industrial High Performance Epoxy, semi-gloss, (1 coat primer, 2 coats paint - to cover)
ss-1	solid surface, LG Hausys HI MACS, color: Arcas T050 (contact Spenser Lehmann at slegmann@lghausy.com or 816.446.8225 for pricing and ordering)
ss-2	solid surface countertops,Wilsonart, color: TBD (contact Mandy Bridges at Mandy.Bridges@VirginiaTile.com or 913.484.2691 for pricing and ordering)
pl-1	plastic laminate, Wilsonart, Randolph Forest 8225, finish: Ridgewood with AEON (contact Mandy Bridges at Mandy.Bridges@VirginiaTile.com or 913.484.2691 for pricing and ordering)
pl-3	plastic laminate cabinets, Wilsonart, color: Beige Pampas 4170, finish: matte finish (contact Mandy Bridges at Mandy.Bridges@VirginiaTile.com or 913.484.2691 for pricing and ordering)
clg-1	acoustical ceiling tile, Armstrong, Ultima beveled tegular #1901, color: white, 24" x 24", beveled tegular tile, fine texture, Prelude XL 15/16" exposed tee grid
dr	solid core wood doors, plain sliced "select" and "clear" maple stain and finish, color:TBD
toilet part.	HDPE solid plastic, color: TBD

finish notes

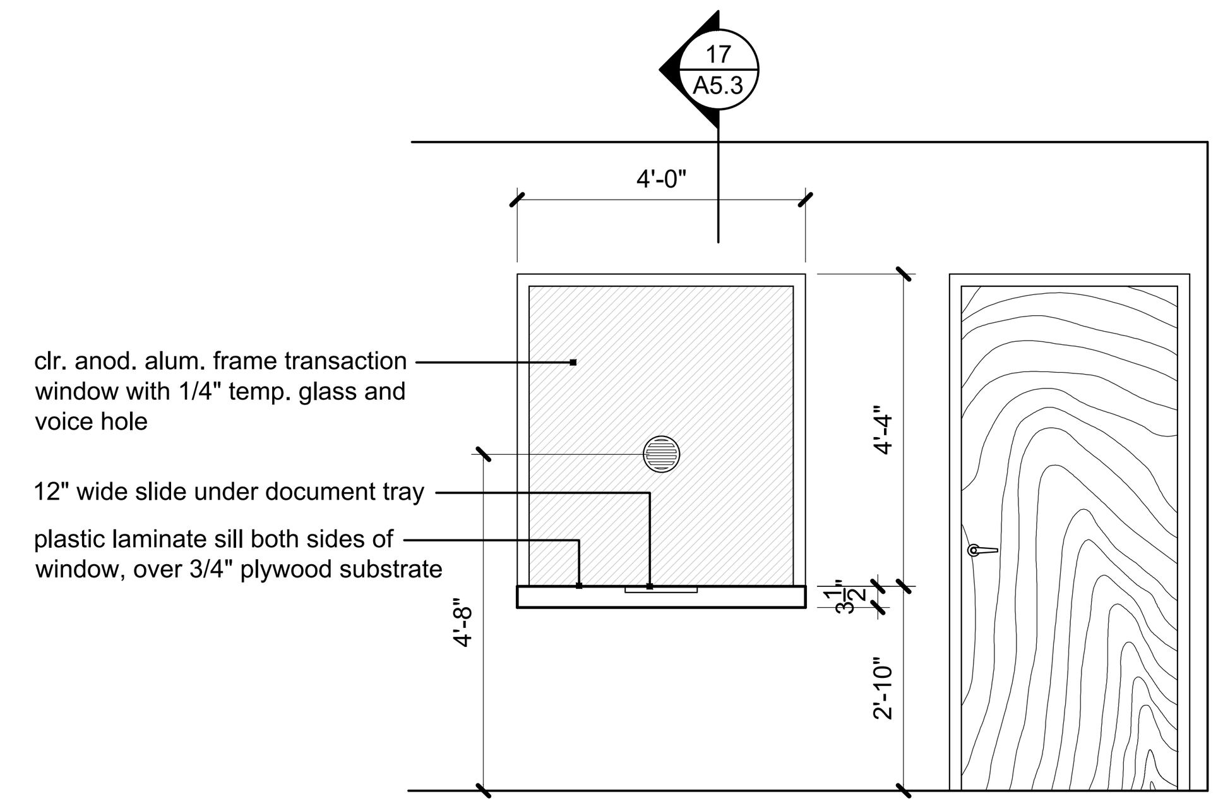
1. e.t.r. = existing to remain.
2. All structural steel beams, columns and joists shall be primed gray.
3. Temper all interior glass.
4. Each material specified for application on the entire project shall be from the same dye lot.
5. All surfaces shall be cleaned and conditioned to receive new finish as required by finish product manufacturer. Surfaces shall be smooth, free from depressions, protrusions, pits, slumps, streaks, flashing, and variation in texture. Installer/subcontractor shall notify general contractor prior to installation if conditions are not satisfactory.
6. All wall mounted mechanical slots or grilles to be painted to match the wall on which they occur. Do not paint prefinished wall mullion end caps.
7. Contractor shall be responsible for leveling of floor slabs to receive specified finishes.
8. All patterned flooring to be centered in both directions and generated from center of room outward toward partitions, unless otherwise noted.
9. All floor finish changes to occur under centerline of door in closed position.
10. Combustible interior finish products shall be provided per the requirement of the International Building Code section 803.4.
11. Finishes shall be bid as specified or as approved equal only.
12. Utilize dens-armour plus in all plumbing wet walls, walls anticipated to be in contact with moisture, and walls to receive ceramic tile.
13. Refer to finish legend for level of gypsum board finish as defined by the gypsum association.

room finish schedule

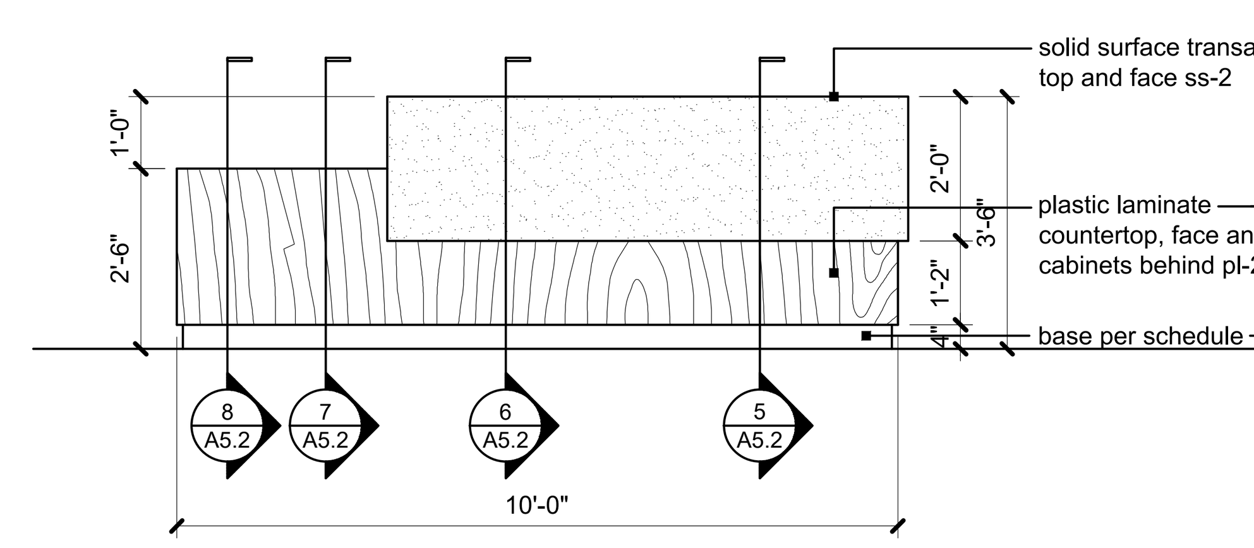
room no.	room name	floor: sc	floor: ef-1	floor: cpt-1	floor: ct-1	floor: ct-2	floor: lvt-1	base: b-1	base: ct-1	base: ct-2	base: ef-1	base: none	wall: north	wall: south	wall: east	wall: west	ceiling: clg-1	ceiling: open dryfall	ceiling: gyp. bd. pt.	ceiling: none	remarks: clg. ht.
101	vestibule				●								pt-1	pt-1	pt-1	pt-1			●		9'-2"
102	lobby				●	●			●	●			pt-1	pt-1	pt-1	pt-1		●			open
103	waiting				●	●			●	●			pt-1	pt-1	pt-1	pt-1	●				9'-0"
104	sales office			●				●					pt-2	pt-1	pt-2	pt-1	●				9'-0"
105	office			●				●					pt-1	pt-1	pt-1	pt-2	●				9'-0"
106	office			●				●					pt-1	pt-1	pt-1	pt-2	●				9'-0"
107	office			●				●					pt-1	pt-1	pt-2	pt-1	●				9'-0"
108	stairs				●				●				pt-1	pt-1	pt-1	pt-1	●				9'-0"
109	corridor				●				●				pt-1	pt-1	pt-1	pt-1	●				9'-0"
110	janitor	●						●					pt-1	pt-1	pt-1	pt-1		●			open
111	men's					●						●	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	●				9'-0"
112	women's					●						●	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	●				9'-0"
113	men's					●				●			cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	●				9'-0"
114	detail office			●				●					pt-1	pt-2	pt-1	pt-1	●				9'-0"
115	corridor				●				●				pt-1	pt-1	pt-1	pt-1	●				9'-0"
116	storage	●						●					pt-1	pt-1	pt-1	pt-1	●				9'-0"
117	tech break room						●	●					pt-1	pt-1	pt-1	pt-1	●				9'-0"
118	corridor		●						●		●		pt-1	pt-1	pt-1	pt-1	●				10'-1"
119	storage	●						●					pt-1	pt-1	pt-1	pt-1		●			-
120	detail bay		●								●		pt-1	-	pt-1	-		●			-
121	detail bay		●								●		-	pt-1	pt-1	-		●			-
122	detail bay		●								●		-	pt-1	-	-		●			-
123	detail bay		●								●		pt-1	-	-			●			-
124	detail bay		●								●		pt-1	-	-			●			-
125	detail bay		●								●		-	pt-1	-			●			-
126	detail bay		●								●		-	pt-1	-			●			-
127	detail bay		●								●		pt-1	-	-			●			-
128	reconditioning		●								●		pt-1	-	-	pt-1		●			-
129	reconditioning		●								●		-	pt	-	pt-1		●			-
130	hand wash bay		●								●		pt-1	pt-1	pt-1	pt-1		●			-
131	car wash equipment		●								●		pt-1	pt-1	pt-1	pt-1		●			-
132	utility		●								●		pt-1	pt-1	pt-1	pt-1		●			-
133	mechanical car wash bay		●								●		pt-1	pt-1	pt-1	pt-1		●			-
201	corridor				●				●				pt-1	pt-1	pt-1	pt-1	●				9'-0"
202	IT	●						●					pt-1	pt-1	pt-1	pt-1		●			open
203	office			●				●					pt-1	pt-1	pt-1	pt-2	●				9'-0"
204	restroom				●							●	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	cwt-1/pt-3	●				9'-0"
205	training room			●				●					pt-1	pt-1	pt-1	pt-1	●				9'-0"



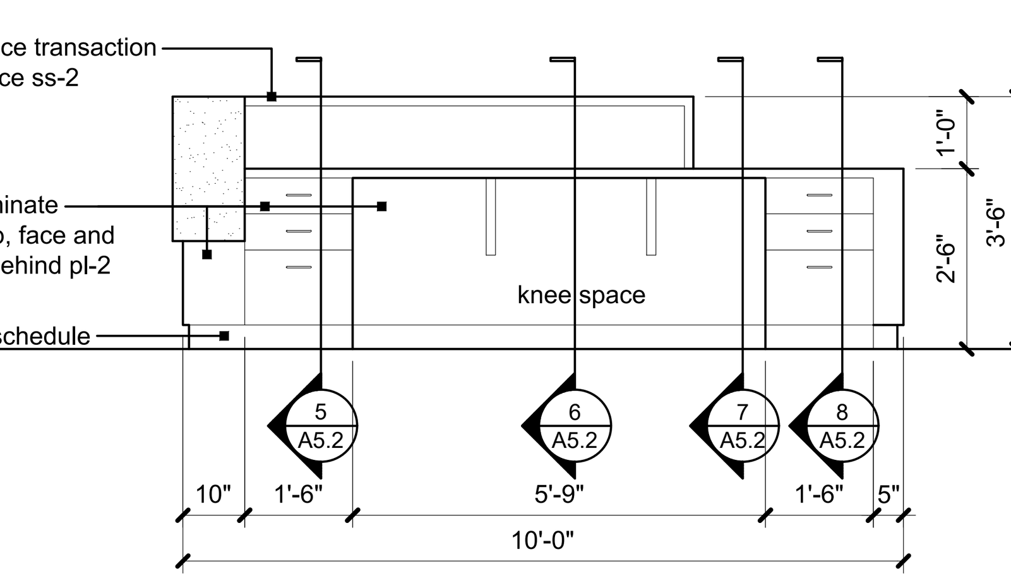
11 Interior Window Elev.
scale: 1"=1'-0"



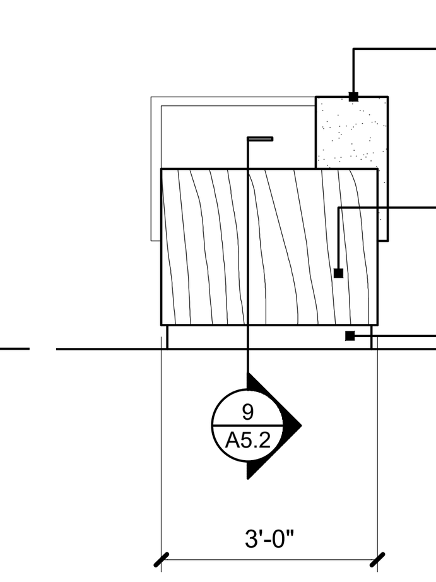
12 Interior Window Elev.
scale: 1"=1'-0"



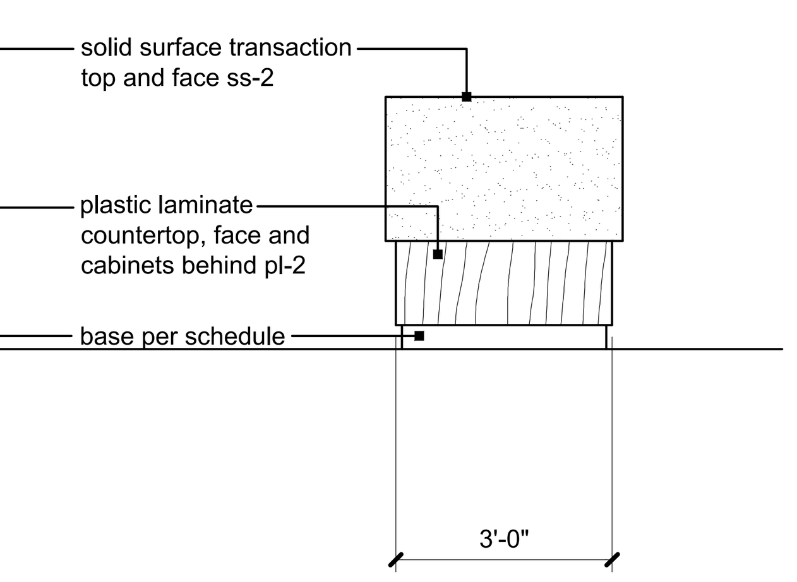
1 Reception Desk Elevation
scale: 3/8" = 1'-0"



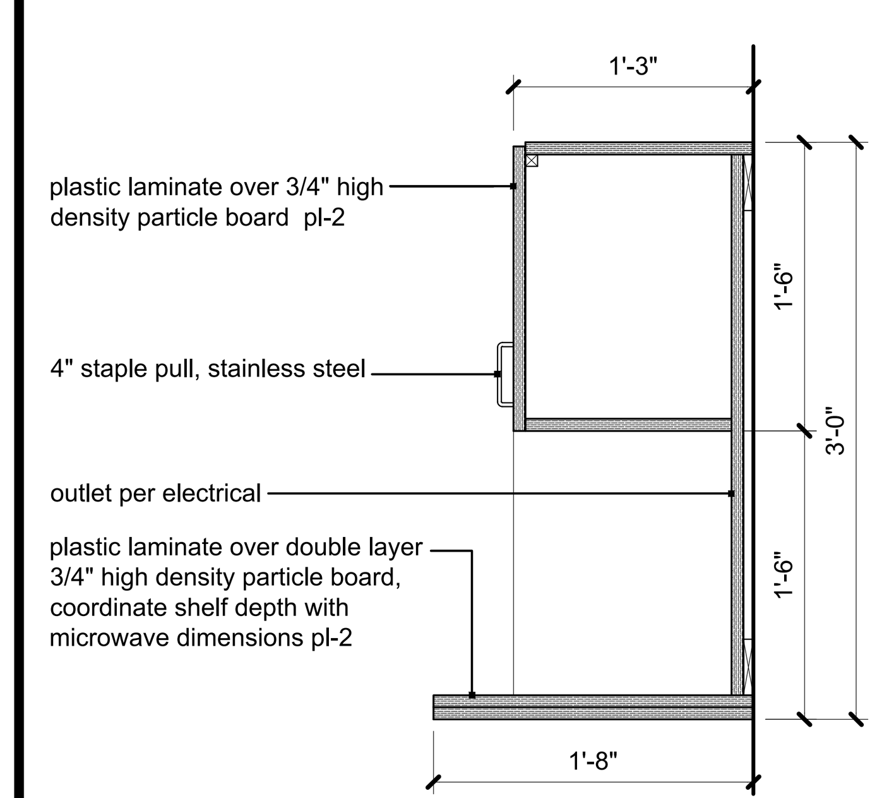
2 Reception Desk Elevation
scale: 3/8" = 1'-0"



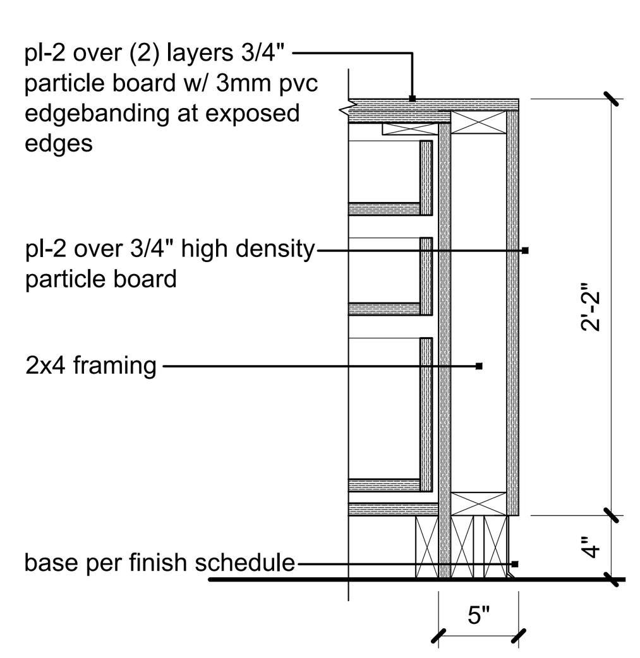
3 Elevation
scale: 3/8" = 1'-0"



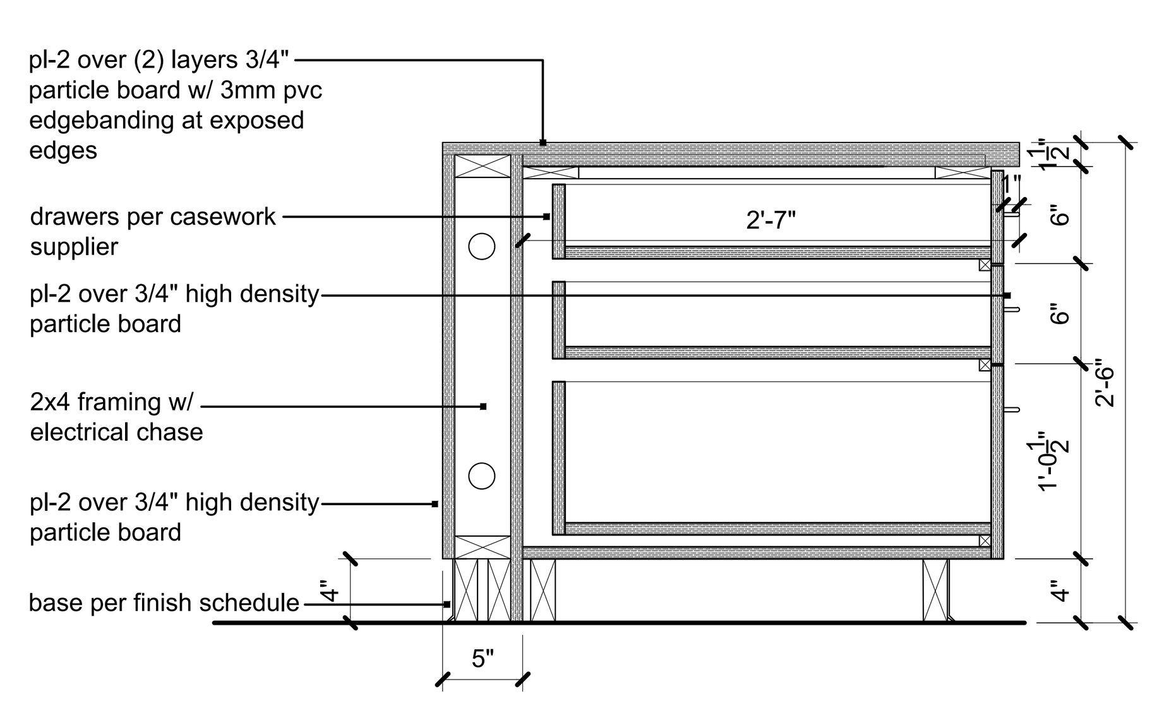
4 Elevation
scale: 3/8" = 1'-0"



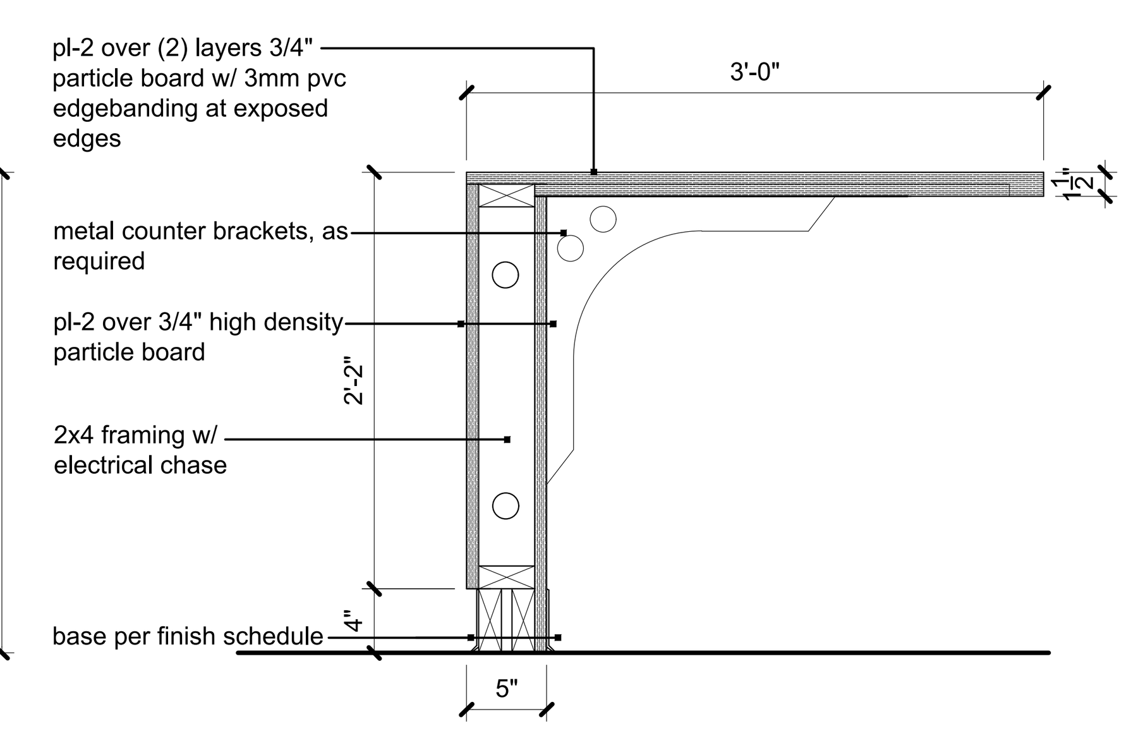
10 Microwave Cab. Dtl.
scale: 1"=1'-0"



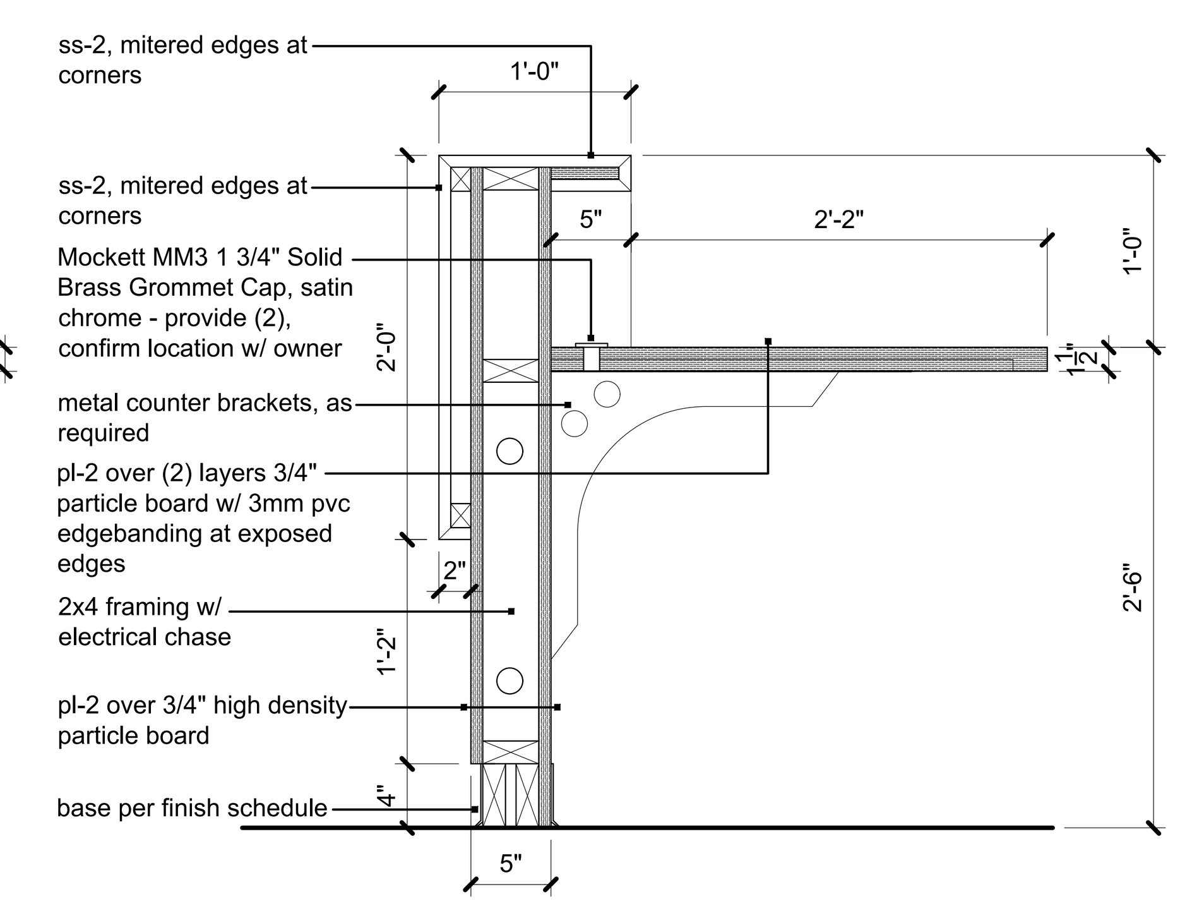
9 Reception Desk Section
scale: 1" = 1'-0"



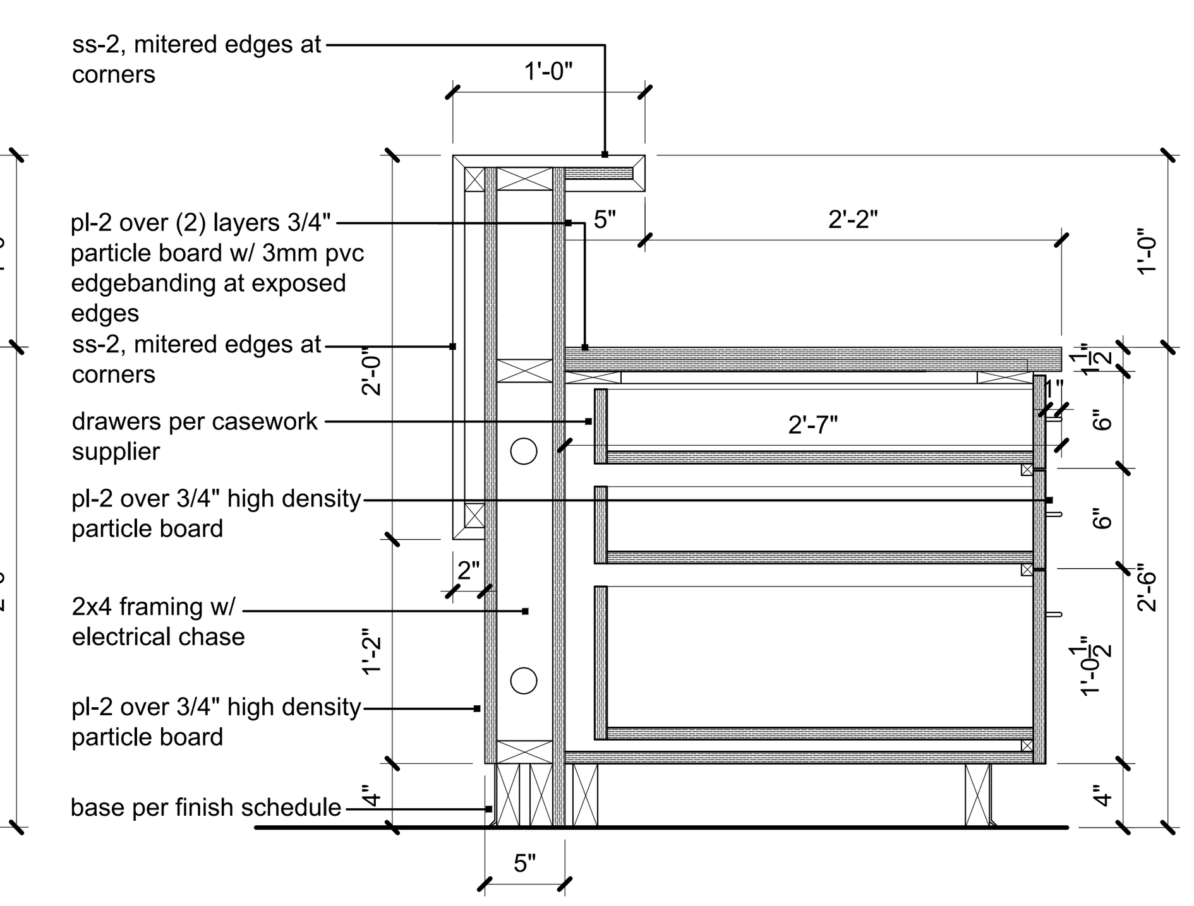
8 Reception Desk Section
scale: 1" = 1'-0"



7 Reception Desk Section
scale: 1" = 1'-0"



6 Reception Desk Section
scale: 1" = 1'-0"



5 Reception Desk Section
scale: 1" = 1'-0"

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STATE OF MISSOURI
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sheet number
A5.2

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permit
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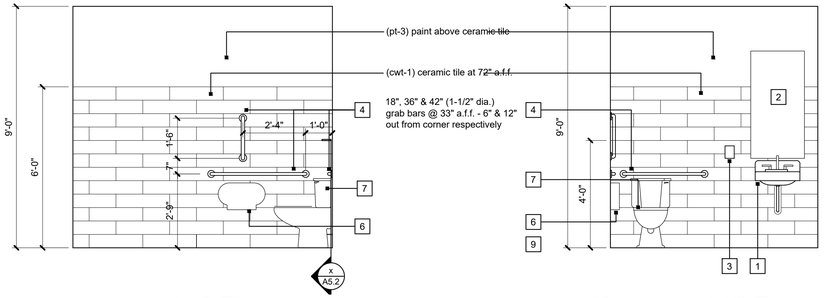
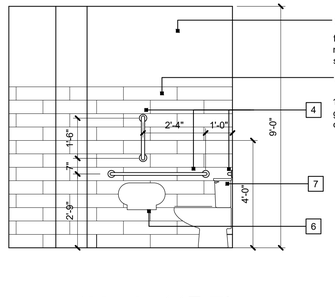
19076

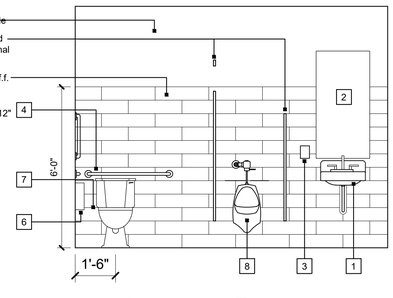


6 Women's 112 Elev.
scale:3/8" = 1'-0"

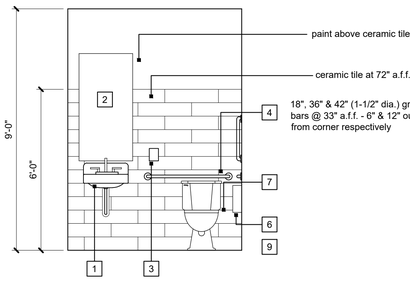
5 Women's 112 Elev.
scale: 3/8" = 1'-0"

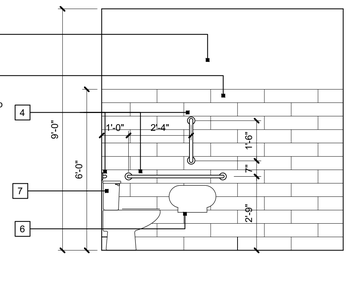


4 Men's 117 Elev.
scale: 3/8" = 1'-0"



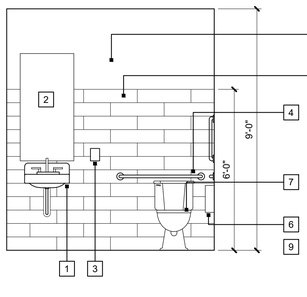
3 Men's 117 Elev.
scale: 3/8" = 1'-0"

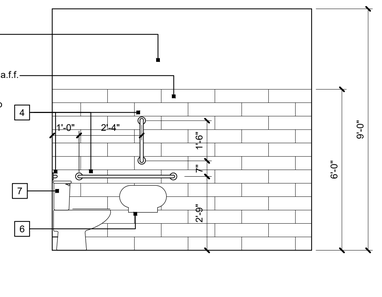




10 204 Elev.
scale: 3/8" = 1'-0"

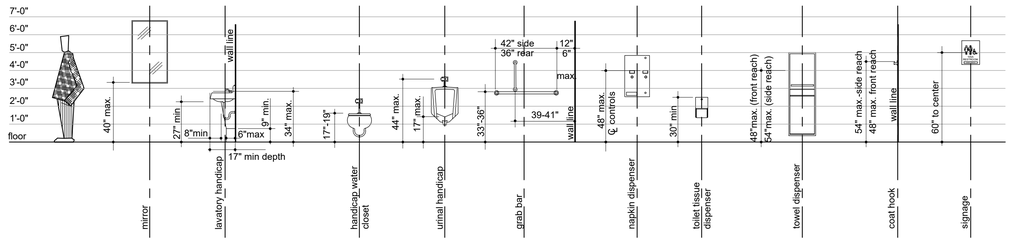
9 204 Elev.
scale: 3/8" = 1'-0"





8 Men's 111 Elev.
scale: 3/8" = 1'-0"

7 Men's 111 Elev.
scale: 3/8" = 1'-0"

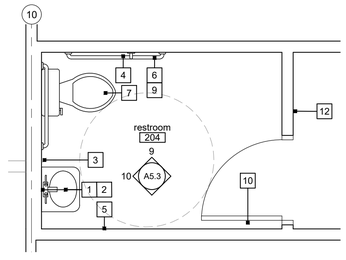


11 ADA Mounting Heights
1/4" = 1'-0"

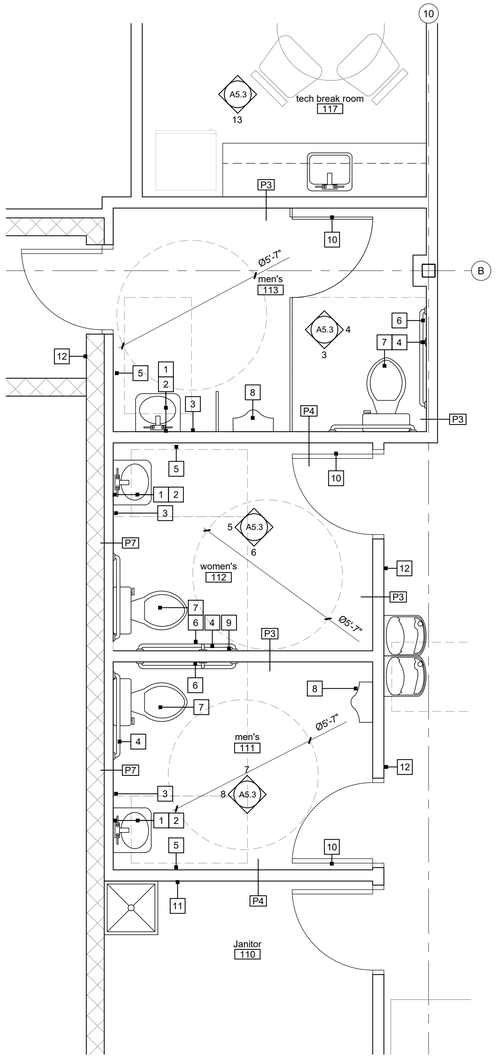
restroom accessory list:

**all restroom accessories to be mounted per ADA

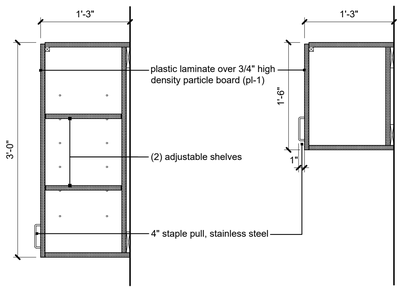
1. Wall mounted sink at 2'-10" a.f.f. with lavatory guard and faucet per ADA.
2. Wall mounted rimless mirror - 24" x 48" with bottom at 40" a.f.f. max. per ADA, Bobrick B-165
3. Surface mounted soap dispenser, Bobrick B-42
4. 18" A.D.A. grab bar - stainless steel, Bobrick B-5806
   36" A.D.A. grab bar - stainless steel, Bobrick B-5806
   42" A.D.A. grab bar - stainless steel, Bobrick B-5806
5. Surface mounted paper towel dispenser, Kimberly-Clark Lev-R-Matic 6119036
6. Surface mounted toilet paper dispenser, Harbor, Twin Jumbo Tissue Dispenser HDJRT1
7. ADA height toilet (white)
8. ADA height urinal (white)
9. Sanitary Napkin Disposal, Brobrick B-270
10. Stainless steel coat hook, Bobrick B-212
11. Mop and broom holder and utility shelf, Bobrick B-224x36
12. Provide ADA compliant Toilet Signage



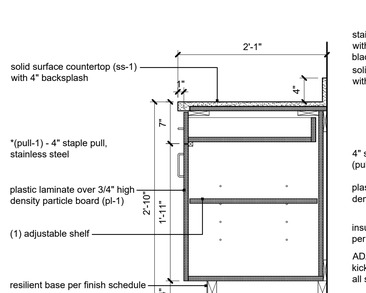
2 2nd Floor Toilet Plan
scale: 3/8" = 1'-0"



1 Toilets and Break Enlarged Plan
scale: 3/8" = 1'-0"

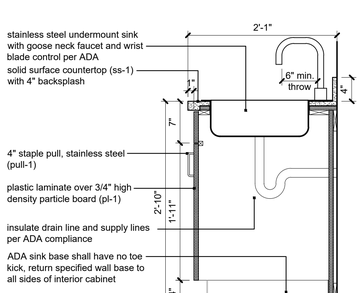


17 Upper Cab. Dtl.
scale: 1"=1'-0"

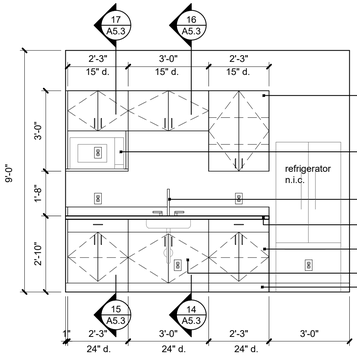


16 Upper Cab. Dtl.
scale: 1"=1'-0"

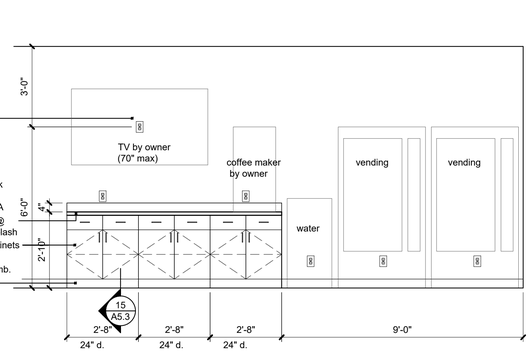
15 Base Cabinet Detail
scale: 1"=1'-0"



14 Sink Base Detail
scale: 1"=1'-0"



13 Break Rm. Elevation
scale: 1/4" = 1'-0"



12 Waiting Elevation
scale: 1/4" = 1'-0"

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POWELL EMERSON MINNIS
NUMBER A-6806
REGISTERED ARCHITECT

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Automotive Sales & Detail Center

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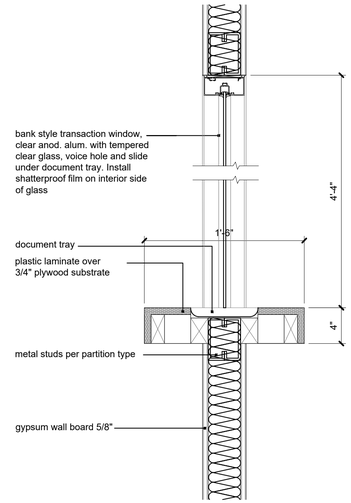

1 Section
scale: 1 1/2" = 1'-0"

door hardware schedule

set no.	item	description	finish	remarks
1	3 pair hw hinges	5bb1 4.5 x 4.5 nrp - ives	652	door part of storefront system - verify with supplier
	2 panic hardware	33a-nl-op - von w/ Schlage cylinder	626	required hardware application
	2 10" door pull	8103HD-0 - ives	630	
	2 surface closer	4110 cush w/ drop plate & mtg. bkts. - lcn	689	
	1 perimeter seal	by door mfr.	gray	
	2 door sweep	101na - ngp	aluminum	
	1 threshold	425 - ngp	aluminum	
2	1-1/2 pair hw hinges	5bb1 4.5 x 4.5 nrp - ives	652	door part of storefront system - verify with supplier
	1 panic hardware	33a-nl-op - von w/ Schlage cylinder	626	required hardware application
	1 10" door pull	8103HD-0 - ives	630	
	1 surface closer	4110 cush w/ drop plate & mtg. bkts. - lcn	689	
	1 perimeter seal	by door mfr.	gray	
	1 door sweep	101na - ngp	aluminum	
	1 threshold	425 - ngp	aluminum	
3	3 pair hw hinges	5bb1 4.5 x 4.5 - ives	652	door part of storefront system - verify with supplier
	2 90° push and pull set - 33"	9190EZHD - ives	630	required hardware application
	2 surface closer	4110 cush w/ drop plate & mtg. bkts. - lcn	689	
	6 silencers	sr64 - ives	gray	
4	1-1/2 pair hw hinges	5bb1 hw 4.5 x 4.5 nrp - ives	652	
	1 storeroom lock	nd96pd rho - sch	626	
	1 surface closer	4050 scush - lcn	689	
	1 drip cap	16a - ngp	aluminum	
	1 perimeter seal	700na - ngp	gray	
	1 door sweep	101na - ngp	aluminum	
	1 threshold	425 - ngp	aluminum	
	1 kickplate	8400 10" - ives	630	
5	3 pair hw hinges	5bb1 hw 4.5 x 4.5 nrp - ives	652	
	1 storeroom lock	nd96pd rho - sch	626	
	1 dummy	nd170 rho - sch	626	
	1 surface closer	4050 scush - lcn	689	
	1 set up/down manual flush bolts	FB458 - ives	626	include strike
	2 drip cap	16a - ngp	aluminum	
	1 perimeter seal	700na - ngp	gray	
	2 door sweep	101na - ngp	aluminum	
	1 threshold	425 - ngp	aluminum	
	1 kickplate	8400 10" - ives	630	
6	3 pair hw hinges	5bb1 4.5 x 4.5 - ives	652	
	1 storeroom lock	nd80pd rho - sch	626	
	1 dummy	nd170 rho - sch	626	
	1 set up/down manual flush bolts	FB458 - ives	626	include strike
	6 silencers	sr64 - ives	gray	
7	1 1/2 pair hw hinges	5bbl - 4.5 x 4.5 - ives	652	
	1 office lockset	nd50rd rho - schlage	626	
	3 silencers	sr64 - ives	gry	
	1 wall stop	ws407ccv - ives	630	
8	1 1/2 pair hw hinges	5bbl - 4.5 x 4.5 - ives	652	
	1 storeroom lockset	nd80rd rho - schlage	626	
	3 silencers	sr64 - ives	gry	
	1 wall stop	ws407ccv - ives	630	
9	1 1/2 pair hw hinges	5bbl - 4.5 x 4.5 - ives	652	
	1 privacy lockset	nd40s rho - schlage	626	
	3 silencers	sr64 - ives	gry	
	1 wall stop	ws407ccv - ives	630	
	1 coat/purse hook	B-6727 - Bobrick	630	
10	1 1/2 pair hw hinges	5bbl - 4.5 x 4.5 - ives	652	
	1 push plate	8200 4" x 16" - ives	630	
	1 pull plate	8303 4" x 16" - ives	630	
	1 closer	1461 cush - lcn	689	
	3 silencers	sr64 - ives	gry	
	1 kickplate	8400 10" - ives	630	
11	1 1/2 pair hw hinges	5bbl - 4.5 x 4.5 - ives	652	
	1 classroom lockset	nd70rd rho - schlage	626	
	1 closer	1461 cush - lcn	689	
	3 silencers	sr64 - ives	gry	
	1 wall stop	ws407ccv - ives	630	
	1 kickplate	8400 10" - ives	630	

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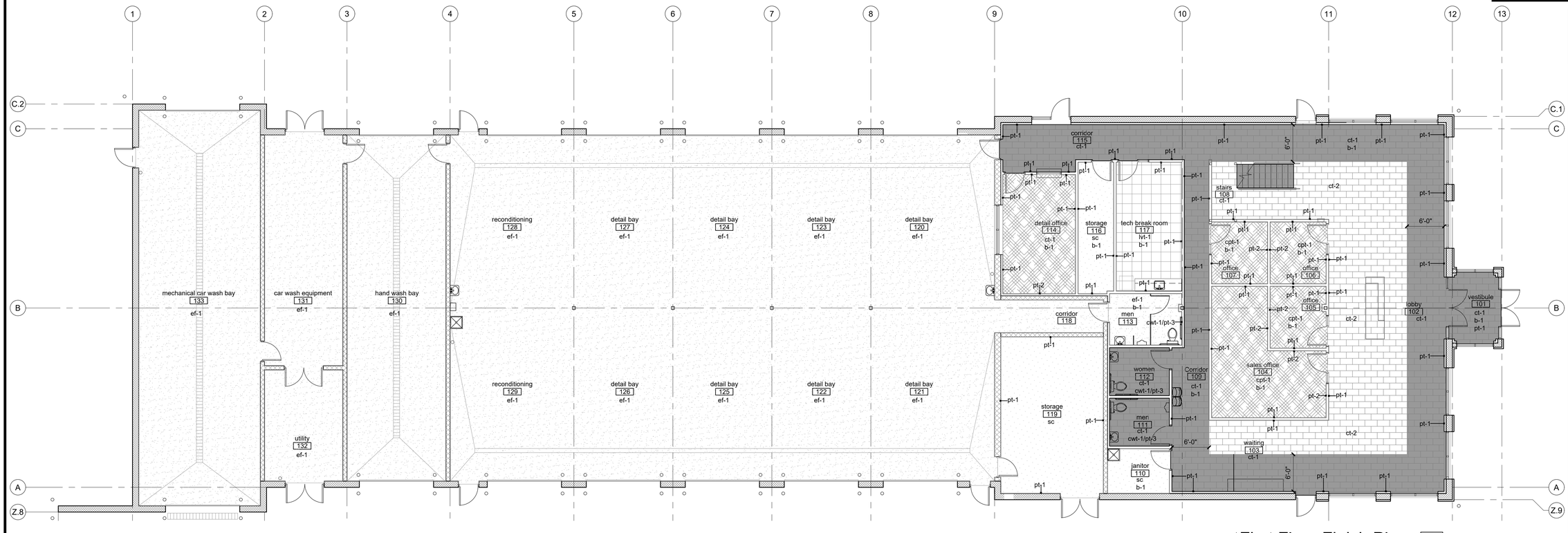
STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6858
REGISTERED ARCHITECT

02.22.2021

A New Facility for
Automotive Sales & Detail Center
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.22.2021
drawn by
DAE
checked by
DAE
revisions

sheet number
A5.4
drawing type
permit
project number
19076

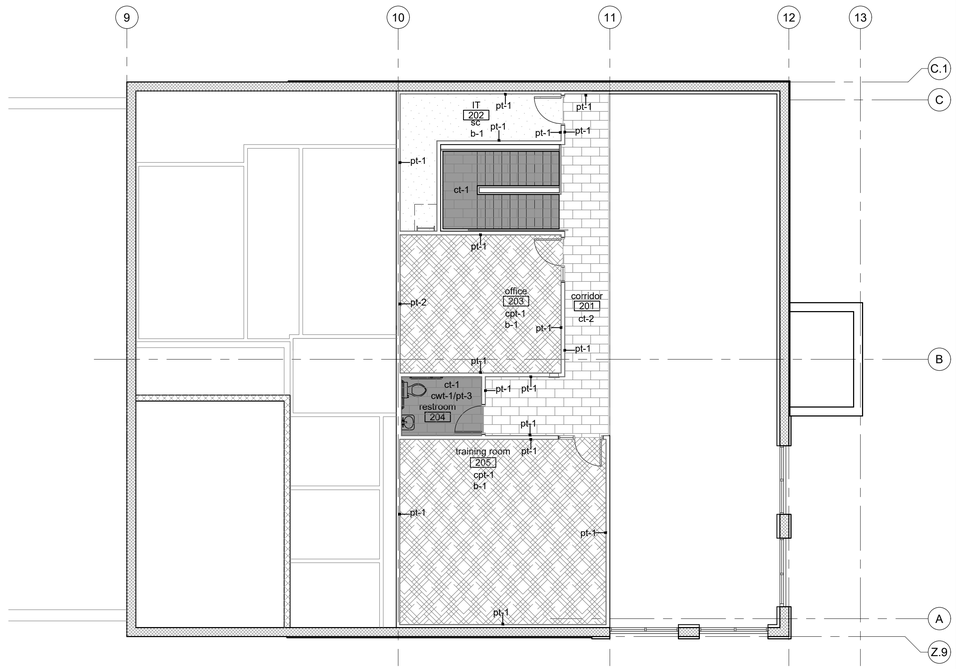


1 First Floor Finish Plan
scale: 1/8" = 1'-0"

north

flooring legend:

- sc - refer to finish legend: sealed concrete
- ef-1 - refer to finish legend: epoxy flooring
- ct-1 - refer to finish legend: ceramic floor tile
- ct-2 - refer to finish legend: ceramic floor tile
- lvt-1 - refer to finish legend: luxury vinyl tile
- cpt-1 - refer to finish legend: carpet tile



2 Mezzanine Finish Plan
scale: 1/8" = 1'-0"

north

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STATE OF MISSOURI
POWELL EMERSON MINNIS
NUMBER A-6998
REGISTERED ARCHITECT

02.22.2021

A New Facility for
Automotive Sales & Detail Center
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
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sheet number
A5.5
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permit
project number
19076

Governing Building Code: 2018 IBC

Design Specifications:
- ASCE 7-16
- ACI 318-14
- ACI 530-16
- AISC 360-16
- AISC 341-16
- AISI S100-16
- ANSI / AWC NDS-18

Roof Loads:
- Dead Load: 15 psf
- Live Load: 20 psf

Floor Loads:
- Dead Load: 70 psf
- Office Live: 80 psf
- Corridor Live: 100 psf

Wind Loads:
- Occupancy: II
- Velocity: 110 mph
- Exposure: C
- Iw: 1.0

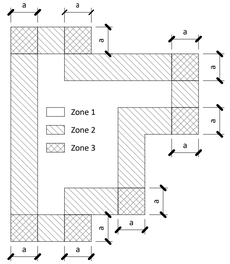
Snow Loads:
- Pg: 20 psf
- Pf: 20 psf
- Ce: 1.0
- Is: 1.0
- Ct: 1.0

Drift Load: Per Plan

Seismic Loads:
- Ie: 1.0
- Ss: 0.099 g
- S1: 0.068 g
- Site Class: D
- Sds: 0.106 g
- Sd1: 0.109 g
- Seismic Design Category: B
- Seismic Force- Resisting System: O.M.S.W.
- Design Base Shear: Cs * W kips
- Cs: 0.0528
- R: 2
- Analysis Procedure Used: E.L.F.P.

Design Loading Notes:

1. Dead load shown includes collateral load of 3 psf.
2. Dead load at Service Bay area collateral of 7 psf for Solar Panels.
2. See components and cladding table for design wind pressures.
3. See net uplift diagram for roof framing due to wind pressures.



Components & Cladding Wind Zone Diagram

1. The components & cladding (C&C) wind pressures shown assume a mean roof height of 28'-0" above finished floor elevation. All components shall be designed to resist the provided pressures, which shall be clearly defined on all shop drawings. Refer to wind zone diagram for zone locations. Plus and minus signs signify pressures acting toward and away from surfaces, respectively.

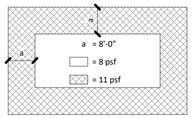
2. The components & cladding wind zone diagram is generalized to show all possible conditions. The diagram shape may not match the specific layout for this project.

3. a = 8'-0"

4. Internal Pressure Coefficient = ±0.18

COMPONENTS AND CLADDING WIND PRESSURES

Zone	Effective Wind Area (sq ft)	Max. +VE Pressure (psf)	Max. -VE Pressure (psf)
1 - Roof Interior	10	16.0	-29.9
1 - Roof Interior	20	16.0	-28.9
1 - Roof Interior	50	16.0	-28.1
1 - Roof Interior	≥ 100	16.0	-27.4
2 - Roof Edge	10	16.0	-50.1
2 - Roof Edge	20	16.0	-43.1
2 - Roof Edge	50	16.0	-37.8
2 - Roof Edge	≥ 100	16.0	-32.4
3 - Roof Corner	10	16.0	-75.5
3 - Roof Corner	20	16.0	-58.3
3 - Roof Corner	50	16.0	-45.4
3 - Roof Corner	≥ 100	16.0	-32.4
4 - Wall Interior	10	27.4	-29.6
4 - Wall Interior	20	26.1	-28.4
4 - Wall Interior	50	24.5	-26.8
4 - Wall Interior	≥ 100	22.1	-24.4
4 - Wall Interior	≥ 500	20.5	-22.8
5 - Wall Edge	10	27.4	-36.5
5 - Wall Edge	20	26.1	-30.8
5 - Wall Edge	50	24.5	-26.0
5 - Wall Edge	≥ 100	22.1	-22.8
5 - Wall Edge	≥ 500	20.5	-34.0



Net Uplift diagram for Joists & Joists Girders
(Pressures shown are strength level.)

General:

1. The structural systems shown on these documents have been designed for the final, in place usage of the structure based on the intended occupancy and code requirements. While general constructability has been considered, the structural systems have not been designed to accommodate specific construction means and methods that might be utilized by the Contractor.

2. The Contractor shall field verify all existing dimensions prior to fabrication.

3. The Contractor shall notify the Engineer of any observed discrepancies in dimensions, detailing, or other items as shown on the plans or specified prior to proceeding with work relating to said discrepancies.

4. The Contractor shall not alter or modify work shown on the structural drawings without receiving written approval from the Engineer.

5. The Contractor shall be responsible for supplying shop drawings for joist girders, bar joists, structural steel, metal deck, reinforcing steel, concrete masonry units and accessories, plan and elevation views of concrete masonry wall elevations including control joint and expansion joint locations, mortar and grout, and concrete mix designs. Shop drawings must be reviewed for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of the Contractor, and shall be stamped "approved" by the Contractor prior to submittal. Shop drawings submitted without the Contractor's stamped approval will be returned "rejected". All shop drawings shall be reviewed by the Structural Engineer prior to construction.

6. See architectural, mechanical, and electrical drawings for other pertinent information related to the structural work and coordinate as required. These structural drawings are intended to be included in a complete set of construction documents, including but not limited to, architectural drawings, civil drawings, and mechanical/electrical/plumbing drawings. Contractor shall verify coordination of these drawings with contents of above drawing sets specified and only proceed with bidding and construction after such has taken place.

7. The building and the independent structural components shown in these documents are not structurally stable until all connections, framing, shear walls, diaphragms, permanent bracing, metal decking, interior and exterior concrete slabs on grade, and exterior or interior load-bearing walls are complete and have achieved their design strength. Contractor is solely responsible for maintaining structural stability during erection and construction. Temporary bracing systems shall remain in place until all structural work is complete.

8. The Contractor is responsible for verifying all existing dimensions and conditions of the existing building and reporting discrepancies from the assumed conditions shown on the structural drawings to the Engineer of record prior to fabrication and erection of any member.

9. The Contractor shall coordinate the roof drainage system with the Architect as required to ensure that no more than 3 1/2" of water can accumulate before entering an overflow drainage system.

Structural Engineer Site Observations:

1. The contract structural drawings & specifications represent the finished structure, and, except where specifically shown, do not indicate the method or means of construction. The Contractor shall supervise and direct the work and shall be solely responsible for all construction means, methods, procedures, techniques, and sequence.

2. The Engineer shall not have control nor charge of and shall not be responsible for, construction means, methods, techniques, sequences, or procedures, for safety precautions & programs in connection with the work, for the acts or omission of the Contractor, subcontractor, or any other persons performing any of the work, or for the failure of any of them to carry out the work in accordance with the contract documents.

3. Periodic site observation by field representatives of BSE Structural Engineers LLC. is solely for the purpose of determining if the work of the Contractor is proceeding in general accordance with the structural contract documents. This limited site observation should not be construed as exhaustive or continuous to check the quality or quantity of work, but rather periodic in an effort to guard the Client against defects or deficiencies in the work of the Contractor.

Slab On Grade:

1. Welded wire fabric shall be supplied in sheets only. Rolls will not be permitted. (As required on construction documents.)

2. Welded wire fabric shall be supported on chairs or blocks prior to concrete placement. Mesh shall not be hooked and pulled up during concrete placement. (As required on construction documents.)

3. Welded wire fabric shall have end and edge laps of one full mesh plus 2" between cross wires. Wire all laps securely together.

4. Welded wire fabric shall conform to ASTM A1064.

5. Floor finish requirements: Slab-on-grade shall be finished to overall floor flatness, overall floor levelness, local floor flatness, and local floor levelness requirements as defined by the Owner. Coordinate requirements as required with G.C. prior to slab-on-grade placement. Floor finish requirements to be determined in accordance with ASTM E 115S.

Foundations:

1. Foundations for this project have been designed in accordance with requirements set forth in a geotechnical report prepared by Intertek PSI in Report No. 03382128 dated October 2, 2020. Continuous and individual footings have been designed for an allowable soil bearing value of 2,000 psf and 2,500 psf, respectively. The Contractor shall refer to the Geotechnical Report for all requirements and recommendations pertinent to this project.

2. Anchor rods shall conform to ASTM F1554 Gr. 36 (U.N.O.) and shall be located by means of a template. Provide a nut above and below template to assure proper vertical alignment.

3. All foundations shall be square and level.

4. Grout shall be dry and stiff to prevent shrinkage, with a minimum compressive strength of 4000 psi. Grout below column base plates and precast panels as required. Thoroughly compact grout beneath base plates.

Concrete and Reinforcing Steel:

1. Concrete mix designs shall meet the following requirements:

Location	Minimum Compressive Strength (psi)	Max. Aggregate Size	Max. Water/Cement Ratio	Slump (in.)	Air Entrainment (%)
Interior Slabs	4000	3/4"	0.50	4 ± 1	0
Exterior Slabs	3500	3/4"	0.50	4 ± 1	6 ± 1
Interior Foundations	3000	1"	0.50	4 ± 1	0
Perimeter Foundations	3000	1"	0.50	4 ± 1	6 ± 1
Exterior Walls & Pedestals	4000	3/4"	0.50	4 ± 1	6 ± 1
Composite Floor Slab	4000	3/4"	0.48	4 ± 1	0

2. Fly ash shall not be used unless approved in writing by the Engineer. Fly ash, if approved, shall conform to ASTM C618 and ACI 232.2R-96. Fly ash shall be limited to types C & F and shall not exceed 15% of the total cement mass.

3. The use of admixtures to increase the slump shall not be used unless approved in writing by the Engineer.

4. All concrete is reinforced unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas.

5. Construction joints in grade beams shall be at midspan unless noted otherwise. Reinforcing steel shall be continuous through construction joints unless noted otherwise.

6. No aluminum items shall be embedded in any concrete or placed in contact with concrete.

7. Reinforcing bars #4 and larger (except ties and stirrups) shall meet ASTM A615 with Supplementary Requirements (S1), Grade 60. Smaller bars shall be Grade 40.

8. Concrete coverage of reinforcement shall have the following clear distances unless noted otherwise on the drawings:

Cast against earth: 3"

Formed concrete exposed to earth or weather: 2"

Not exposed to earth or weather: 1" Slabs, 1 1/2" Beams and columns

9. Embedded and all reinforcing bars marked continuous shall be embedded to develop the full tensile capacity of the bar. Laps shall be Class B tension laps unless specified otherwise on the drawings. Unless shown otherwise, splice top bars near midspan and splice bottom bars over supports.

10. Supply corner bars 4'-0" long (min. 2'-0" in each direction) in outside face of wall at corners of all walls and grade beams, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply three (3) - #4 vertical support bars for corner bars.

11. All bars are to be supported in forms and spaced with wire bar supports per ACI "Manual of Standard Practice for Detailing Concrete Structures" (latest edition). Bars shall be securely wired per the latest edition of CRSI's "Recommended Practice for Placing Reinforcing Bars." Accessories for exposed concrete shall be plastic or shall have plastic-tipped feet.

12. Concrete placed during cold weather shall conform to the requirements of the most recent version of ACI 306R. Cold weather is defined as a period when, for more than 3 successive days, the mean daily temperature drops below 40°F.

13. Concrete placed during hot weather shall conform to the requirements of the most recent version of ACI 305R. Hot weather is defined as that combination of air temperature, concrete temperature, relative humidity and wind speed that will cause a rate of evaporation of 0.2 lb/sq.ft./hr. or more as defined by Figure 2.1.5 of ACI 305R.

14. Do not add water to concrete during delivery, at Project Site, or during placement, unless approved by the Engineer.

15. Provide 3/4" chamfer on all exposed corners unless noted otherwise on architectural or structural construction documents.

16. All cold joints shall be roughened and cleaned unless noted otherwise.

17. Vertical control joints in walls shall be placed at 30'-0" maximum spacing unless noted otherwise. Locate joints beside piers monolithic with walls, near corners, and in concealed locations where possible. Construction joints may be placed in lieu of control joints at contractors discretion. Coordinate location of control joints with Architect.

18. Refer to the geotechnical report for behind wall drainage recommendations. G.C. to coordinate with civil drawings as required. Refer to architectural drawings for foundation waterproofing and insulation requirements.

Post-Installed Anchors:

1. Post-Installed anchors shall only be used where specified in the construction documents or approved by the engineer.

2. The Contractor shall obtain written approval from the Engineer prior to installing post-installed anchors for misplaced-placed anchors.

3. Care shall be taken with placing post-installed anchors to avoid damaging existing reinforcement.

4. The holes shall be drilled and cleaned in accordance with the manufacturer's specifications.

5. Post-installed anchors shall meet ACI 318 Appendix D criteria. The following are acceptable post-installed anchors:

All adhesive anchoring systems referred to in these drawings shall be one of the following:
a. Hilti HIT HY 200
b. Powers AC100+ Gold
c. Simpson Strong-Tie SET-3G
d. Or Approved Equivalent

All screw anchors referred to in these drawings shall be one of the following:
a. Hilti KH-EZ
b. Powers Wedge Bolt+
c. Simpson Strong-Tie Titan HD
d. Or Approved Equivalent

Masonry:

1. Mortar shall be Type S for all masonry work and must achieve a minimum compressive strength of 1800 psi at the 28-day test. Masonry units shall have a minimum strength of f'm = 1900 psi.

2. Masonry grout shall be a coarse-type grout and must achieve a minimum compressive strength of 2000 psi at the 28-day test. Slump shall range from 8" minimum to 10" maximum. Grout materials and proportions shall conform to ASTM C476.

3. All masonry shall be reinforced with horizontal 9 gauge truss type reinforcement at 16" o.c. vertical or as shown on the drawings.

4. Vertical reinforcing shall be installed as noted on the drawings. Reinforcing bars shall be lapped as specified on the design drawings. If no lap length is shown, contact the Engineer.

5. Vertical control joints in masonry shall be 3/8" wide, full height of wall at locations shown on the Architectural drawings. Joints shall be spaced at a maximum of 25'-0" apart and coordinated with the Architect. All horizontal joint reinforcing shall be discontinuous at masonry control joints. Refer to typical details for additional information

6. Lintels over openings shall be installed as indicated on the drawings. If no lintels are indicated, notify the Engineer.

7. Provide at least (1) vertical rebar at each end of each wall, side of control joints, jambs, corner, and intersection of all reinforced masonry walls. Size of rebar to match the size of typical vertical reinforcing shown.

8. Provide (1) corner bar at each horizontal bond beam. Size of rebar to match typical bond beam reinforcing shown.

9. Submit shop drawings including plan and elevation views of reinforced masonry walls including bond beams, control joints, expansion joints, and lintels.

10. All steel beams bearing on masonry shall have (3) cores minimum grouted full directly below the bearing locations unless noted otherwise.

11. All bond beam reinforcing shall continue through control joints.

12. All cells containing reinforcement, bolts, or other metal anchors shall be grouted solid. Any cells below grade shall be grouted solid whether reinforced or not.

Structural Steel:

1. All structural steel shall conform to the following (U.N.O.):

Structural Steel Wide Flanges:	ASTM A992
Miscellaneous Steel:	ASTM A36
Structural Tubing:	ASTM A500, Grade B (Fy = 46 ksi)
Steel Pipe:	ASTM A53, Type E or S, Grade B

2. Bolts shall be as follows (U.N.O.):

Connection Bolts:	ASTM A325
Anchor Rods:	ASTM F1554, Grade 36
Shear Studs:	ASTM A108, Grade 1015 through 1020

3. Welding shall conform to the latest publication of applicable codes set forth by the American Welding Society. Welding electrodes shall be E70XX.

4. All exterior steel exposed to weather shall be hot-dipped galvanized and/or painted per Architect unless noted other wise.

5. Weld all joists to supporting members with 1/8" x 2" long fillet welds on each side of the joist. In steel frames, where columns are not framed in at least two directions with structural steel members, joists at column lines shall be field-bolted at the columns to provide lateral stability during construction.

6. All roof bar joists shall be designed for uplift as stipulated by the applicable building code. Extra bracing shall be added as required, and the joist manufacturer shall certify that the joists have been designed for reverse bending due to uplift.

7. All bar joists shall be designed to resist loads induced by fascia panel bracing members.

8. All bar joists shall have horizontal bridging as recommended by the Steel Joist Institute. Provide rigid "X" bridging in addition to horizontal bridging where horizontal bridging is discontinuous, unless horizontal bridging is connected to a wall at the top and bottom of the joist. Refer to the plans for other locations of "X" bridging. The erector shall follow the latest requirements of the Steel Joist Institute regarding additional bolted "X" bridging required for erection stability.

9. All pipe hangers supporting more than 100 lbs. and being supported from steel bar joists or joist girders shall be hung from top chords and within 2" of web panel points. If interferences exist that will not allow pipe to be hung in this manner, the Contractor shall notify the Engineer for required modifications.

10. All openings in the roof shall be framed with a 4 x 4 x 1/4 angle minimum, unless noted otherwise. Mechanical units shall be supported with structural steel frames as required. If framing is not shown for mechanical units, notify the Engineer.

11. All steel stairs shall be designed by the steel stair manufacturer in compliance with the governing building code to meet 100 psf design live load.

ABBREVIATIONS LIST

&	AND
@	AT
°	DEGREES
=	EQUALS
'	FEET
>	GREATER THAN
≥	GREATER THAN OR EQUAL TO
"	INCHES
<	LESS THAN
≤	LESS THAN OR EQUAL TO
-	MINUS, NEGATIVE
+	PLUS
±	PLUS OR MINUS
A.F.F	ABOVE FINISHED FLOOR
ALT.	ALTERNATE
ARCH.	ARCHITECT
BLDG.	BUILDING
BM.	BEAM
B.O.S.	BOTTOM OF STEEL
BOTT.	BOTTOM
C.J.	CONTROL/CONSTRUCTION JOINT
CL	CENTER LINE
C.M.U.	CONCRETE MASONRY UNIT
CLG.	CEILING
CLR.	CLEAR
COL.	COLUMN
CONC.	CONCRETE
CONT.	CONTINUOUS
COORD.	COORDINATE
CTR.	CENTER
DIA.	DIAMETER
DN.	DOWN
DWG.	DRAWING
E.J.	EXPANSION JOINT
E.O.R.	ENGINEER OF RECORD
EA.	EACH
EL.	ELEVATION
ELEV.	ELEVATION
ENG.	ENGINEER
EQ.	EQUAL
EQUIP.	EQUIPMENT
ETC.	ET CETERA
EXIST.	EXISTING
EXT.	EXTERIOR
F.A.	FACE
F.B.E.	FOOTING BEARING ELEVATION
F.F.E.	FINISHED FLOOR ELEVATION
F.S.	FAR SIDE
FT.	FOOT/FEET
FTG.	FOOTING/FOUNDATION
G.C.	GENERAL CONTRACTOR
GALV.	GALVANIZED
GYP.	GYPSUM
HORIZ.	HORIZONTAL
IN	INCHES
J.B.E.	JOIST BEARING ELEVATION
JT.	JOINT
KSI	KIPS PER SQUARE INCH
K	KIPS
L.F.	LINEAR FEET
LB.	POUND
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
M.B.M.	METAL BUILDING MANUFACTURER
M.E.P.	MECHANICAL ELECTRICAL PLUMBING
MAX.	MAXIMUM
MIN.	MINIMUM
MISC.	MISCELLANEOUS
N.A.	NOT APPLICABLE
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
Ø	DIAMETER
P.E.M.B.	PRE-ENGINEERED METAL BUILDING
PL.	PLATE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REINF.	REINFORCED
REQ'D.	REQUIRED
SF	SQUARE FEET
SIM.	SIMILAR
SPA.	SPACING
SPEC.	SPECIFICATION
SQ.	SQUARE
T.O.C.	TOP OF CONCRETE
T.O.F.	TOP OF FOOTING
T.O.S.	TOP OF STEEL
T.O.W.	TOP OF WALL
THRU.	THROUGH
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT.	VERTICAL
W.W.F.	WELDED WIRE FABRIC
WT.	WEIGHT
W/	WITH
W/O	WITHOUT

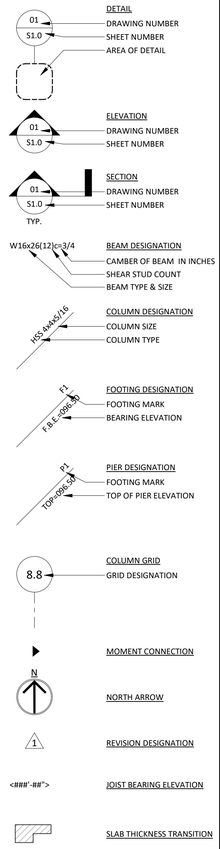
SHEET LIST

Sheet Number	Sheet Name
S0.0	GENERAL NOTES
S0.1	ISOMETRIC
S0.01	GENERAL NOTES
S1.1	FOUNDATION PLAN
S2.1	MEZZANINE FRAMING PLAN
S2.2	ROOF FRAMING PLAN
S3.1	TYPICAL FOUNDATION DETAILS
S3.2	FOUNDATION DETAILS
S4.1	TYPICAL FRAMING DETAILS
S4.2	TYPICAL FRAMING DETAILS
S4.3	TYPICAL FRAMING DETAILS
S4.4	TYPICAL FRAMING DETAILS
S4.5	FRAMING DETAILS
S4.6	MASONRY ELEVATIONS
S4.7	MASONRY ELEVATIONS

MATERIALS LEGEND

ALUMINUM
CONCRETE
EARTH
GRAVEL
GROUT
GYPSUM
INSULATION - RIGID
MASONRY - BRICK
MASONRY - CMU
PLYWOOD
STEEL
TILT / PRE-CAST

SYMBOLS LEGEND



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Project Number 20-467

STATE OF MISSOURI
JUSTIN E. BURGOON
NUMBER PE-2014015015
2021-02-23
PROFESSIONAL ENGINEER

Automotive Sales & Detail Center

a redevelopement for

2100 NE Independence Ave

Lee's Summit, Missouri 64064

date
02.23.2021
drawn by
ZNP
checked by
RS
revisions

sheet number
S0.0
GENERAL NOTES

drawing type
project number

Special Inspector:

1. The following items require special inspection in accordance with the building code.
   a. Reinforced masonry construction - level 1 inspection
   b. Concrete & masonry grout design mix
   c. Placing of concrete & reinforcing steel
   d. Bolts & anchors embedded in concrete & masonry
   e. Concrete formwork
   f. Structural steel fabrication
   g. Structural steel bolting & welding
   h. Inspection of roof & deck attachment
   I. Post installed anchors in masonry & concrete
   J. In-situ soils, excavations, filling & compaction

2. The Contractor shall request special inspection of the items listed above prior to those items becoming inaccessible & unobservable due to progression of the work.

3. The Special Inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the building official, for inspection of the particular type of construction or operation requiring special inspection.

4. The Special Inspector shall observe the work assigned for conformance with the approved design drawings and specifications.

5. The Special Inspector shall furnish inspection reports to the Building Official, the Engineer and Architect of record, and other designated persons. All discrepancies shall be brought to the immediate attention of the Contractor for correction, then if uncorrected, to the proper design authority and to the Building Official.

6. The Special Inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable workmanship provisions of the governing building codes.

Earthwork:

1. The Inspector must verify that the preparation of the natural ground and the placement of engineered fill is performed in accordance with the GEOTECHNICAL engineer's recommendations as stated in the GEOTECHNICAL report.

2. The Inspector must monitor the placement of all fill to determine whether the type of material, moisture content, and degree of compaction are within the recommended limits contained in the GEOTECHNICAL report. Proceed with subsequent earthwork only after test results for previously completed work comply with recommended limits contained in the GEOTECHNICAL report.

3. All Subgrade supporting footings and slabs must be inspected immediately prior to the placement of reinforced concrete.

4. Paved and building slab areas shall be tested at Subgrade and at each compacted fill and backfill layer, at least once for every 2000 sq. ft. or less of paved or building slab areas, but in no case fewer than 3 tests.

5. Foundation wall backfill shall be tested at each compacted initial and final backfill layer, at least once for each 100 ft. or less of wall length, but no fewer than 2 tests.

6. Trench backfill shall be tested at each compacted initial and final backfill layer, at least once for each 150 ft. or less of trench length, but no fewer than 2 tests.

7. Test compaction of soils-in-place in accordance with ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.

8. Test Reporting: Test results must be reported to BSE and the general contractor in writing within 24 hours after testing, via fax. Reports must contain the project name, the date of the test and the location of the test.

Concrete:

1. Strength test cylinders shall be prepared for each day's pour of each concrete mix and at a minimum frequency of every 50 cu. yd. on all concrete placed. Conform to ASTM C39.

2. Four (4) test cylinders are to be made and cured on site for the first 24 hours. Test one of the specimens at 7 days and two at 28 days. Hold the fourth specimen in reserve for later testing if needed.

3. Slump, air content and temperature tests shall be conducted at a minimum when strength specimens are made and at any other times as specified by the Engineer.

4. Perform slump tests on a representative concrete sample at the point of discharge. Perform additional tests when concrete consistency seems to have changed. The maximum allowable field slump is 5 inches. Conform to ASTM C143.

5. Perform air content tests on all concrete specified to be air-entrained. Conform to ASTM C231.

6. Perform a temperature test every hour when air temperature is 40°F and below, or when air temperature is 80°F and above. Conform to ASTM C 1064.

7. Prior to the closing of forms or the delivery of concrete to the job site, the inspector shall verify that the reinforcing steel is in conformance with the city-approved plans, specifications and shop drawings. The inspector shall confirm that the reinforcing steel is of the correct size and grade and ensure that the proper spacing, clearances, splice lengths and embedded items have been provided. All reinforcing steel shall be in place prior to the placement of concrete and be secured against displacement.

8. The Inspector shall verify that the bolt size, location and embedment length of all anchor bolts are in conformance with the city-approved plans, specifications and shop drawings.

9. Anchor rods 3/4"ϕ or smaller may be floated in place following concrete placement, provided that anchor bolts are worked easily by hand into the fresh concrete to allow for full contact with the shank of the bolt. Bolts shall be placed by means of a template and shall be worked into concrete in vertical alignment.

10. Test Reporting: Test results must be reported to BSE and the General Contractor in writing within 24 hours after testing, via fax or email. Reports of compressive strength tests must contain the project name, the date of concrete placement, the location of concrete placement within the structure and the concrete mix design being used.

Structural Steel:

1. Bolts: Bolts that are not identified as being slip-critical nor in direct tension need not be inspected other than to verify that the plies of connected elements are brought into snug-tight condition in properly-aligned holes.

2. Field Welding: Inspection is required for single-pass fillet welds, multi-pass fillet welds, complete- and partial-penetration groove welds, floor and roof deck welding, and stairs and railing systems. Prior to the start of the work, materials, qualifications of welding procedures and welder qualifications shall be verified. Provide continuous or periodic inspection of the structural welding as indicated in Table 1704.3 of the referenced IBC. Inspections may occur periodically, as defined below. A visual inspection to ensure proper type, size, length and quality of all field welds is required prior to work being concealed by other materials.

3. Periodic inspection: "Periodic" is defined as generally once a week at a minimum, and more often as needed to observe work requiring inspections, as outlined above, prior to being covered by subsequent construction.

4. Shear connector stud welds will be inspected and tested according to AWS D1.1 for stud welding. Shear connector stud welds shall be visually inspected. Bend tests shall be performed if visual inspections reveal less than a 360-degree flash or welding repairs to any shear connector stud.

5. Structural steel bar joists and metal buildings fabricated on the premises of a facility/plant not certified by a nationally recognized organization, shall have in-plant special inspections. AISC, ICBO, CWB and SJI are certified fabricators.

6. Test Reporting: Test results must be reported to BSE and the General Contractor in writing within 24 hours of testing, via fax or email. Reports must contain the project name, the date of the test and the location of the test.

Masonry:

1. Mortar properties, grout, brick, concrete masonry unit and prism tests and evaluations are to be performed during construction for each 5,000 sq. ft. of wall area or portion thereof.

2. Mortar properties are to be tested per ASTM C 780.

3. Grout will be sampled and tested for compressive strength per ASTM C 1019.

4. Brick tests for each type and grade of brick indicated are to be performed according to ASTM C 67.

5. Concrete masonry unit tests for each type of concrete masonry unit indicated are to be performed per ASTM C 140.

6. Masonry prisms are to be tested per ASTM C 1314. Prepare one (1) set of prisms for testing at 7 days and one (1) set for testing at 28 days.

7. Special inspection of masonry construction is required during preparation and taking of any required prisms or test specimens, placing of all masonry units, placement of reinforcement and inspection of grout space immediately prior to closing cleanouts, and during all grouting operations.

8. Test Reporting: Test results must be reported to BS and the general contractor in writing within 24 hours of testing, via fax. Reports must contain the project name, the date of the test and the location of the test.

Structural Wood:

1. Special inspections of structural wood framing to be performed in accordance with section 1705.11.2. of the referenced IBC.

2. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of components within the seismic force resisting system, including wood shear walls, wood diaphragms, drag struts, braces, shear panels, and hold-downs.

3. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of components within the wind force resisting system, including wood shear walls, wood diaphragms, drag struts, braces, shear panels, and hold-downs.

4. Test Reporting: Test results must be reported to BSE and the general contractor in writing within 24 hours of testing, via fax. Reports must contain the project name, the date of the test and the location of the test.
[ENGINEER TO VERIFY IF SECTION IS REQ'D]

Required Verification and Inspection of Steel Construction Other Than Structural Steel Per IBC Table 1705.2.2

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Material verification of cold-formed steel deck:			
a. Identification markings to conform to ASTM standards specified in the approved construction documents.	-	X	Applicable ASTM material standards
b. Manufacturer's certified test reports.	-	X	
2. Inspection of welding and attachment:			
a. Cold-formed steel deck:			
1. Floor and roof deck welds and other means of attachment.	-	X	AWS D1.3
b. Reinforcing steel:			
1. Verification of edibility of reinforcing steel other than ASTM A 706.	-	X	AWS D1.4 ACI 318: Section 3.5.2
2. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	X X	- -	
3. Shear reinforcement.	-	X	
4. Other reinforcing steel.			

a. Where applicable, see also Section 1705.11 Special inspections for seismic resistance.

Required Special Inspections of Open-Web Steel Joists and Joist Girders Per IBC Table 1705.2.3

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Installation of open web steel joist and joist girders:			
a. End Connections - welding or bolted.	-	X	SJI Specifications listed in Section 2207.1.
b. Bridging - horizontal or diagonal.	-		
1. Standard bridging.	-	X	SJI Specifications listed in Section 2207.1.
2. Bridging that differs from the SJI specifications listed in Section 2207.1.	-	X	

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.

Required Special Inspections and Tests of Concrete Construction Per IBC Table 1705.3

Type	Continuous Special Inspection	Periodic Special Inspection	Referenced Standard
1. Inspect reinforcement, including prestressing tendons, and verify placement.	-	X	ACI 318 Chp. 20, 25.2, 25.3, 26.6.1.-26.6.3.
2. Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706 b. Inspect single-pass fillet welds, maximum 5/16"; and c. Inspect all other welds.	- - X	X X -	AWS D1.4 ACI 318: 26.6.4
3. Inspect anchors cast in concrete.	-	X	ACI 318: 17.8.2
4. Inspect anchors post-installed in hardened concrete members a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical anchor and adhesive anchors not defined in 4.a.	X -	- X	ACI 318: 17.8.2.4 ACI 318: 17.8.2.
5. Verify use of required design mix.	-	X	ACI 318: Chp. 19, 26.4.3, 26.4.4
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C172 ASTM C31 ACI 318: 26.4, 26.12
7. Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.5
8. Verify maintenance of specified curing temperatures and techniques.	-	X	ACI 318: 26.5.3-26.5.5
9. Inspect prestressed concrete for: a. Application of prestressing forces; and b. Grouting of bonded prestressing tendons.	X X	- -	ACI 318: 26.10
10. Inspect erection of precast concrete members.	-	X	ACI 318: Chp. 26.8
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	X	ACI 318: 26.11.2
12. Inspect framework for shape, location and dimensions of the concrete member being formed.	-	X	ACI 318: 26.11.1.2(B)

a. Where applicable, see also Section 1705.12, Special inspections for seismic resistance.
b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

Required Special Inspections and Tests of Soils Per IBC Table 1705.6

Type	Continuous Special Inspection	Periodic Special Inspection
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	-	X
2. Verify excavations are extended to proper depth and have reached proper material.	-	X
3. Perform classification and testing of compacted fill materials.	-	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	X	-
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	-	X

Required Special Inspections and Tests of Driven Deep Foundation Elements Per IBC Table 1705.7

Type	Continuous Special Inspection	Periodic Special Inspection
1. Verify element materials, sizes and lengths comply with the requirements.	X	-
2. Determine capacities of test elements and conduct additional load tests, as required.	X	-
3. Inspect driving operations and maintain complete and accurate records for each element.	X	-
4. Verify placement locations and plumbness, confirm type size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	-
5. For steel elements, perform additional special inspections in accordance with Section 1705.2.	-	-
6. For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3.	-	-
7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge.	-	-

Required Special Inspections and Tests of Cast-In-Place Deep Foundation Elements Per IBC Table 1705.8

Type	Continuous Special Inspection	Periodic Special Inspection
1. Inspect drilling operations and maintain complete and accurate records for each element.	X	-
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	-
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3.	-	-

Required Quality Control Inspections (GCI) & Quality Assurance Inspections (QAI) of Steel Construction Per AISC 360, Specification Chapter M & N

Type	Frequency of Inspections	Referenced Standard
1. The fabricator's QCI shall inspect the following as a minimum, as applicable: a. Shop welding, high strength bolting and details in accordance with AISC 360, Section N5. b. Shop cut and finished surfaces in accordance with AISC 360, section M2. c. Shop heating for straightening, cambering and curving in accordance with AISC 360, Section M2.1. d. Tolerances for shop fabrication in accordance with the Code of Standard Practice, Section 6.	Per AISC Per AISC Per AISC Per AISC	AISC 360 Chp. M & N TABLE N5.4-1 TABLE N5.4-2 TABLE N5.4-3 TABLE N5.6-1 TABLE N5.6-2 TABLE N5.6-3 TABLE N6.1 Code of Standard Practice Sec. 6
2. The erector's QCI shall inspect the following as a minimum, as applicable: a. Field welding, high strength bolting and details in accordance with AISC 360, Section N5. b. Steel deck and headed steel stud anchor placement and attachment in accordance with AISC 360, Section N6. c. Field cut surfaces in accordance with AISC 360, Section M2.2. d. Field heating for straightening in accordance with AISC 360, Section M2.1. e. Tolerances for field erection in accordance with the Code of Standard Practice, Section 7.13.	Per AISC Per AISC Per AISC Per AISC Per AISC	AISC 360 Chp. M&N TABLE N5.4-1 TABLE N5.4-2 TABLE N5.4-3 TABLE N5.6-1 TABLE N5.6-2 TABLE N5.6-3 TABLE N6.1 Code of Standard Practice Sec. 6
3. QAI shall be performed by others. All required inspection and non-destructive testing, as applicable, shall be in accordance with AISC 360	Per AISC & IBC	AISC 360 Chp. M&N

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STATE OF MISSOURI
JUSTIN E. BURGOON
NUMBER PE-2014015015
2021-02-23
PROFESSIONAL ENGINEER

a redevelopement for
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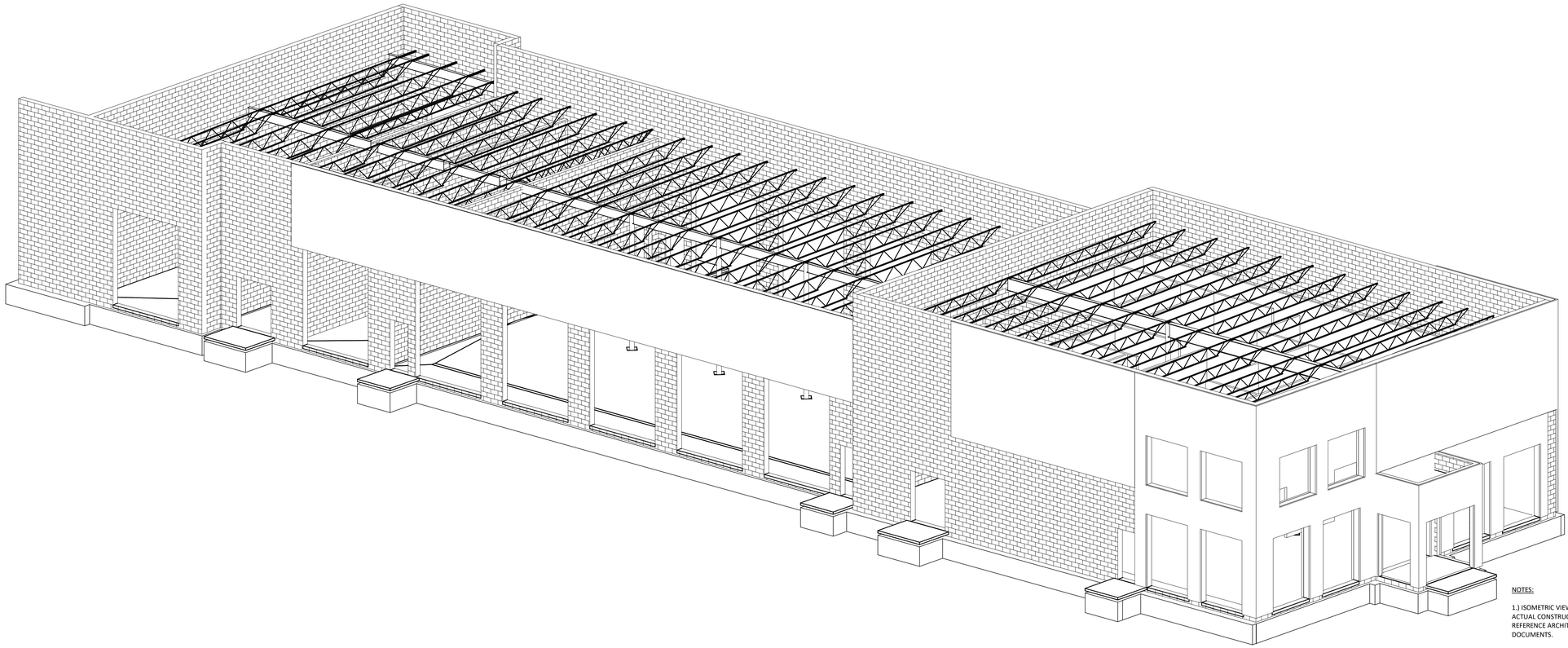
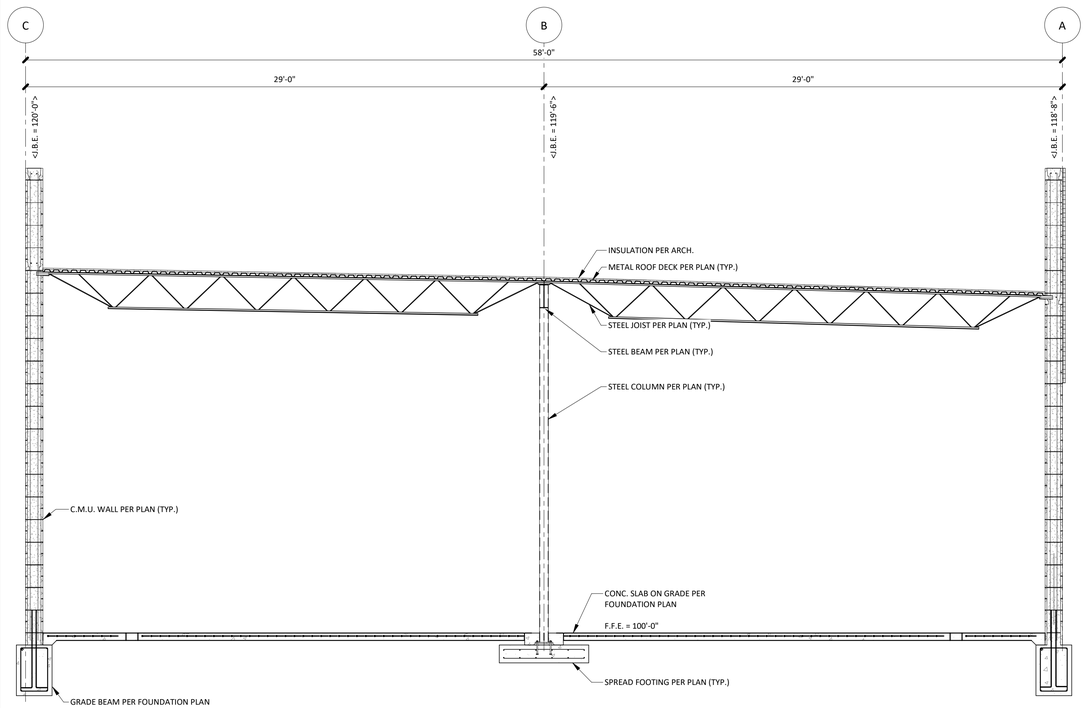


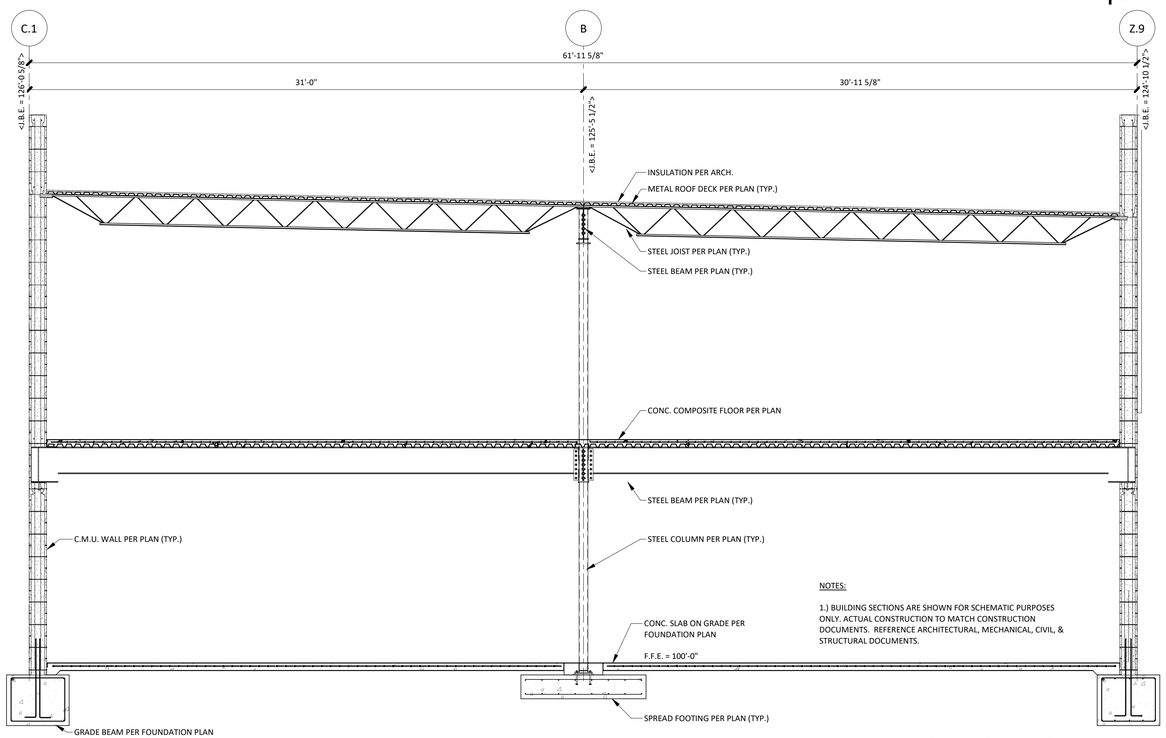
NOTES:

1.) ISOMETRIC VIEWS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. ACTUAL CONSTRUCTION TO MATCH CONSTRUCTION DOCUMENTS. REFERENCE ARCHITECTURAL, MECHANICAL, CIVIL, & STRUCTURAL DOCUMENTS.

ISOMETRIC | 01
S0.1



BUILDING SECTION | 02
1/4" = 1'-0" | S0.1



NOTES:

1.) BUILDING SECTIONS ARE SHOWN FOR SCHEMATIC PURPOSES ONLY. ACTUAL CONSTRUCTION TO MATCH CONSTRUCTION DOCUMENTS. REFERENCE ARCHITECTURAL, MECHANICAL, CIVIL, & STRUCTURAL DOCUMENTS.

BUILDING SECTION | 03
1/4" = 1'-0" | S0.1

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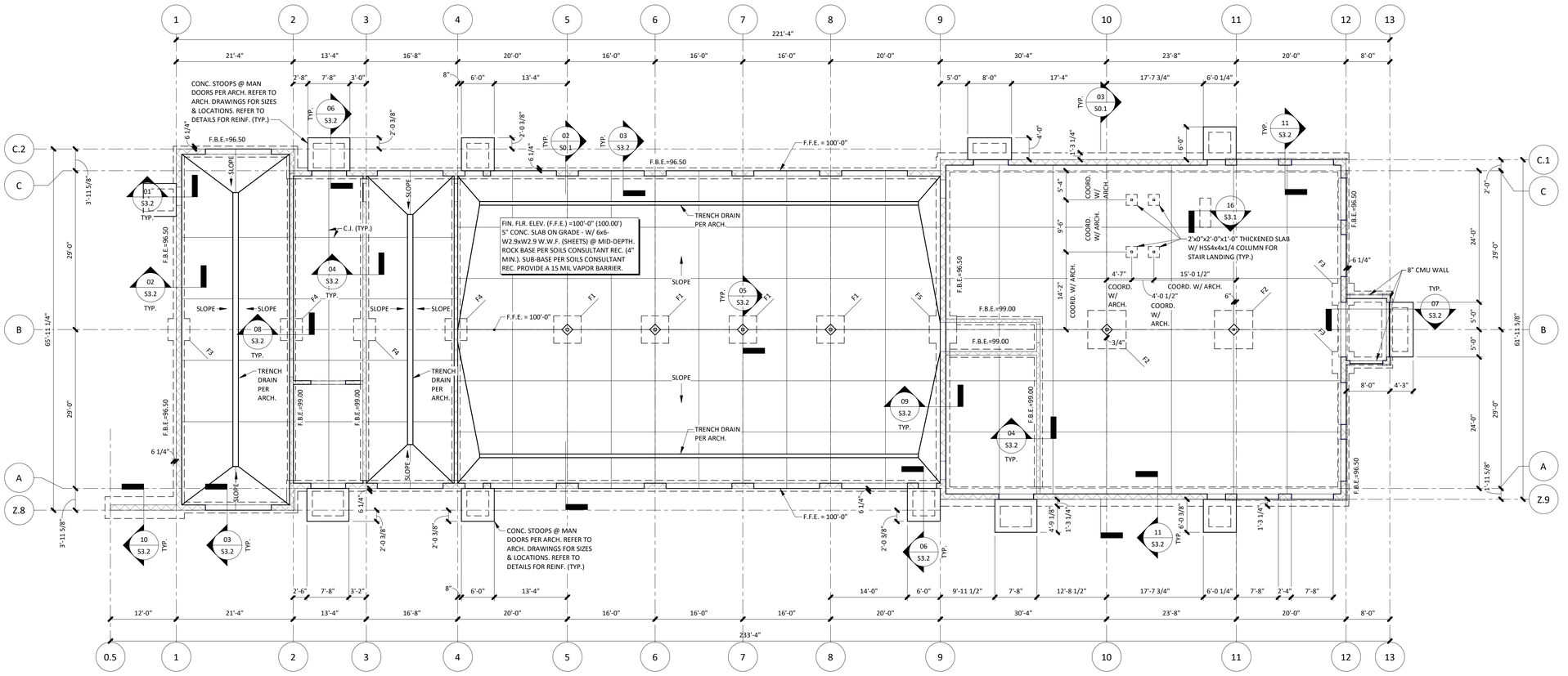

FOUNDATION SCHEDULE				
MARK	DIMENSIONS	REINFORCEMENT	F.B.E.	COMMENTS
F1	5'-0" x 5'-0" x 1'-0"	#5 @ 12" SPA. EA. WAY BOTT. & #4 @ 12" SPA. EA. WAY TOP	98.33	
F2	8'-0" x 8'-0" x 1'-0"	#5 @ 12" SPA. EA. WAY BOTT. & #4 @ 12" SPA. EA. WAY TOP	98.00	
F3	4'-0" x 4'-0" x 2'-10"	#5 @ 10" SPA. EA. WAY TOP & BOTT	96.50	
F4	4'-0" x 4'-0" x 1'-0"	#5 @ 12" SPA. EA. WAY BOTT. & #4 @ 12" SPA. EA. WAY TOP	99.00	
F5	5'-0" x 5'-0" x 2'-10"	#5 @ 10" SPA. EA. WAY TOP & BOTT	96.50	

NOTES:

1.) SEE DRAWING S0.0 FOR GENERAL NOTES, SYMBOLS LEGEND, MATERIALS LEGEND, & ABBREVIATION LIST.

2.) REFERENCE DRAWING S3.1 FOR TYPICAL FOUNDATION DETAILS INCLUDING ANCHOR ROD DETAILS, FOOTING STEP DETAILS, CONTROL JOINT & CONSTRUCTION JOINT DETAILS, REINF. LAP LENGTH TABLE, ETC.

3.) SEE DRAWING S0.1 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.

4.) EXTERIOR MASONRY CMU WALLS ARE 12" U.N.O. INTERIOR NON LOAD BEARING CMU TO BE 8" U.N.O.

5.) REFER TO GEOTECHNICAL REPORT FOR BEHIND WALL DRAINAGE RECOMMENDATIONS. COORD. W/ CIVIL AS REQ'D. REFER TO ARCHITECTURAL DRAWINGS FOR FOUNDATION WATERPROOFING & INSULATION REQUIREMENTS.

FOUNDATION PLAN | 01
3/32" = 1'-0" | S1.1

N

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FOUNDATION PLAN

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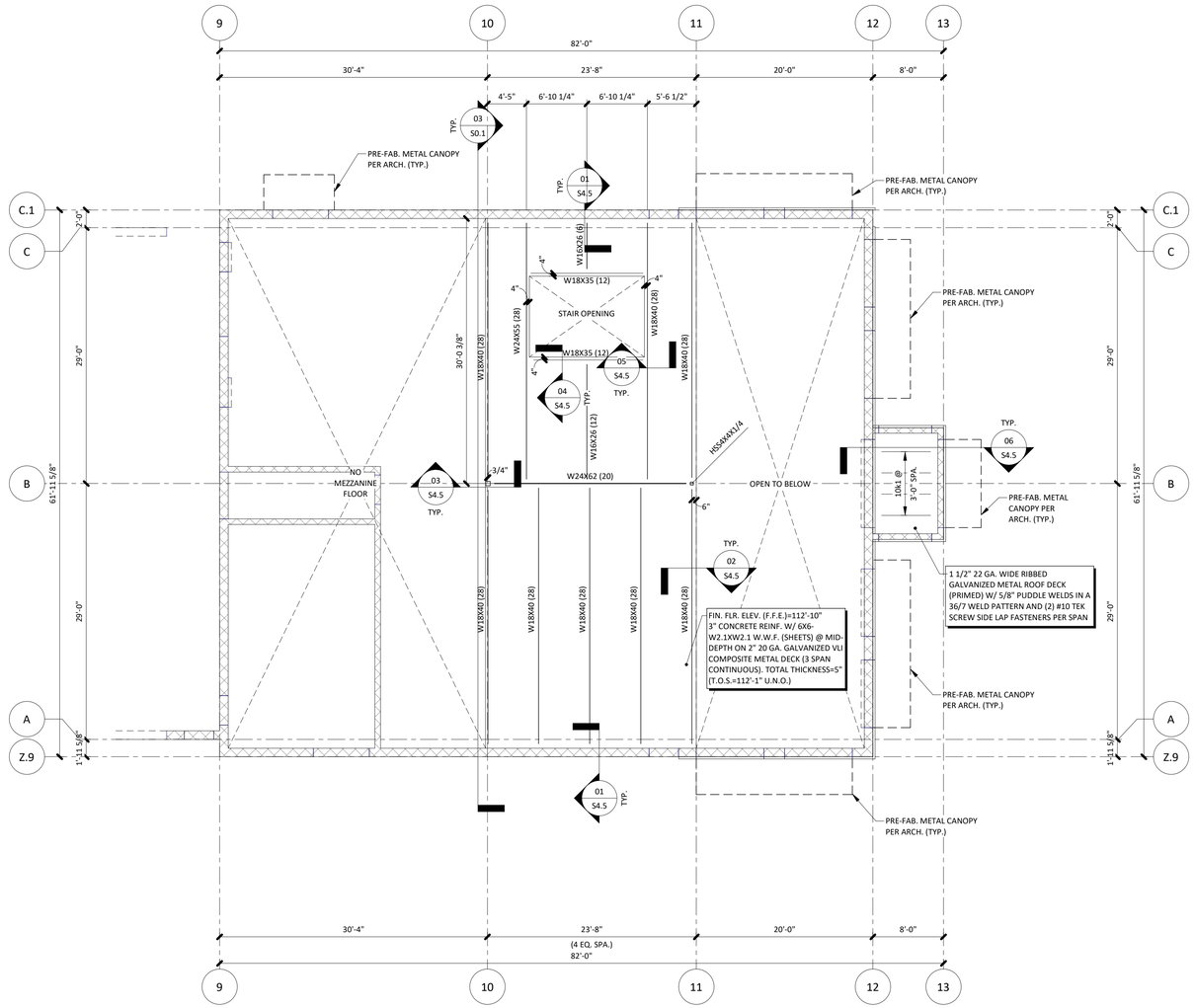

NOTES:

1.) SEE DRAWING S0.0 FOR GENERAL NOTES, SYMBOLS LEGEND, MATERIALS LEGEND, & ABBREVIATION LIST.

2.) REFERENCE DRAWING S4.1 FOR TYPICAL FRAMING DETAILS.

3.) SEE DRAWING S0.1 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.

4.) REFERENCE ARCHITECTURAL DRAWINGS TO VERIFY SIZE & LOCATIONS OF ALL FLOOR & WALL OPENINGS.

5.) PROVIDE JOIST BRIDGING PER SJI REQUIREMENTS.

6.) MASONRY CMU WALLS ARE 8" U.N.O.

7.) REFERENCE DRAWING S4.1 FOR TYPICAL MASONRY LINTEL DETAILS.

7.) ALL EXTERIOR LINTELS SUPPORTING STONE OR BRICK SHALL BE GALVANIZED U.N.O. ON ARCHITECTURAL DRAWINGS.

8.) PROVIDE 3/4" x 4" LONG HEADED SHEAR STUDS FOR COMPOSITE BEAMS. SEE TYPICAL FRAMING DETAILS SHEET S4.1 FOR ADDITIONAL DETAILS.

9.) ATTACH COMPOSITE METAL DECK W/ 5/8" PUDDLE WELD IN A 36/4 PATTERN & (2) WELDED SIDE LAP FASTENERS PER SPAN.

MEZZANINE FRAMING PLAN | 01

1/8" = 1'-0" | S2.1

N

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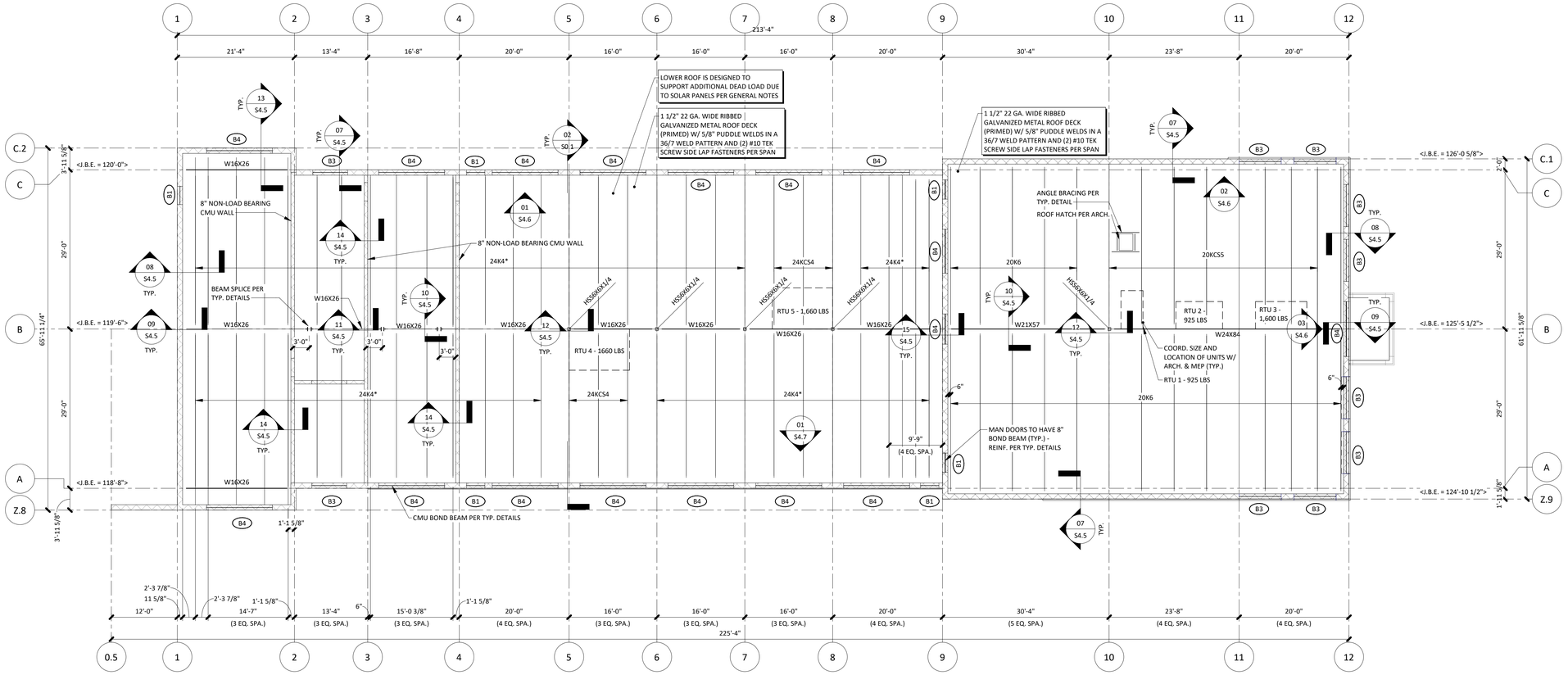

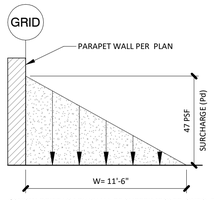

*SNOW DRIFT LOADS SHALL BE SUPERIMPOSED ONTO THE FLAT ROOF SNOW LOADS

SNOW DRIFT DIAGRAM | 3/8" = 1'-0"

	BOND BEAM SCHEDULE				
TAG	MAX. SPAN	GROUTED BOND BEAM DEPTH	BOTT. REINF.	TOP REINF.	# OF BRG. CELLS
B1	4'-0"	8"	(2) #5	N/A	2
B2	6'-0"	12"	(2) #5	N/A	2
B3	8'-0"	16"	(2) #5	N/A	2
B4	12'-0"	24"	(2) #6	(2) #5	2

BOND BEAM SCHEDULE | 02 | S2.2
1 1/2" = 1'-0"

NOTES:

1.) SEE DRAWING S0.0 FOR GENERAL NOTES, SYMBOLS LEGEND, MATERIALS LEGEND, & ABBREVIATION LIST.

2.) REFERENCE DRAWING S4.3 FOR TYPICAL FRAMING DETAILS.

3.) SEE DRAWING S0.2 FOR ISOMETRIC VIEW & FULL BUILDING SECTIONS.

4.) REFERENCE ARCHITECTURAL DRAWINGS TO VERIFY SIZE & LOCATIONS OF ALL ROOF & WALL OPENINGS.

5.) PROVIDE JOIST BRIDGING PER SJI REQUIREMENTS.

6.) * = JOIST TO BE DESIGNED FOR ADDITIONAL SNOW DRIFT - SEE SNOW DRIFT DETAIL

7.) MASONRY CMU WALLS ARE 12" U.N.O.

8.) REFERENCE DRAWING S4.1 & S4.2 FOR TYPICAL MASONRY LINTEL DETAILS.

9.) ALL EXTERIOR LINTELS SUPPORTING STONE OR BRICK SHALL BE GALVANIZED U.N.O. ON ARCHITECTURAL DRAWINGS. REFER TO DETAILS FOR SIZES. COORD. LOCATIONS W/ ARCHITECTURAL DRAWINGS.

10.) ROOF JOIST TO BE DESIGNED FOR ADDITIONAL ROOF EQUIPMENT LOAD AS SHOWN.

ROOF FRAMING PLAN | 01 | S2.2
3/32" = 1'-0"

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Project Number 20-467

STATE OF MISSOURI
JUSTIN E. BURGOON
NUMBER PE-2014015015
PROFESSIONAL ENGINEER
2021-02-23

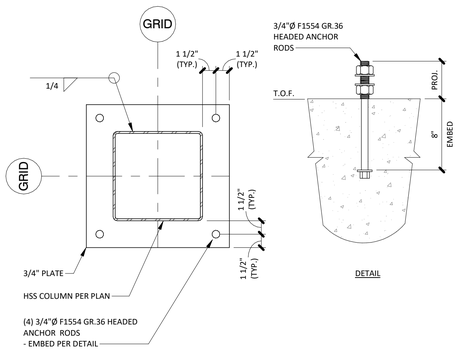
a redevelopement for
Automotive Sales & Detail Center
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.23.2021
drawn by
Author
checked by
Checker
revisions

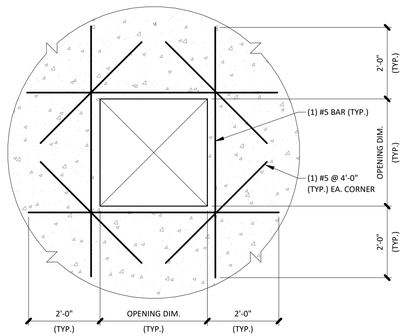
sheet number
S2.2
ROOF FRAMING PLAN

drawing type
project number

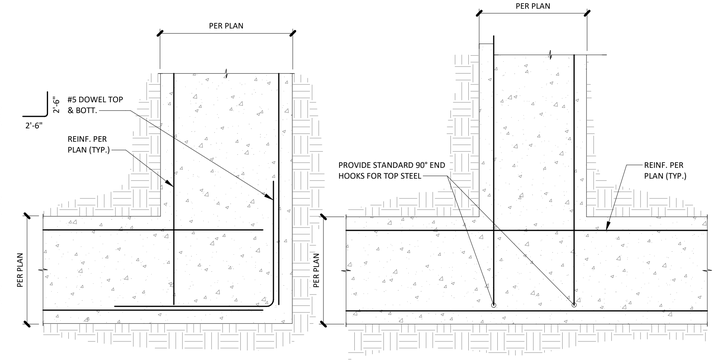
NOTES:
1.) FOR STANDARD SIZE HOLES, PROVIDE ASTM F844 (USS STANDARD) WASHERS. FOR HOLES THAT ARE MORE THAN 5/16" LARGER THAN ANCHOR ROD DIAMETER, PROVIDE PLATE WASHERS BETWEEN NUT & PLATE PER TABLE 14-2 IN AISC STANDARD.
2.) FOR ANCHORS RODS 1" DIAMETER AND LARGER, PROVIDE PLATE WASHERS BETWEEN NUT & PLATE PER TABLE 14-2 IN AISC STANDARD. WELD WASHER TO TOP OF BASE PLATE WITH 3/16" FILLET WELD.



TYP. ANCHOR ROD & BASE PLATE DETAIL | 01
1 1/2" = 1'-0" | S3.1



TYP. SLAB OPENING DETAIL | 02
1/2" = 1'-0" | S3.1



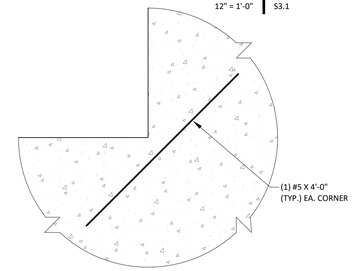
NOTE:
GRADE BEAMS SHALL BE POURED MONOLITHICALLY AROUND CORNERS.

NOTE:
GRADE BEAMS SHALL BE POURED MONOLITHICALLY AT INTERSECTIONS.

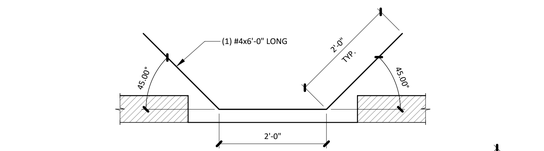
TYP. GRADE BEAM DETAILS | 03
3/4" = 1'-0" | S3.1

STANDARD HOOK TABLE	
BAR SIZE	HOOK
#4	8 in.
#5	10 in.
#6	12 in.
#7	14 in.
#8	16 in.

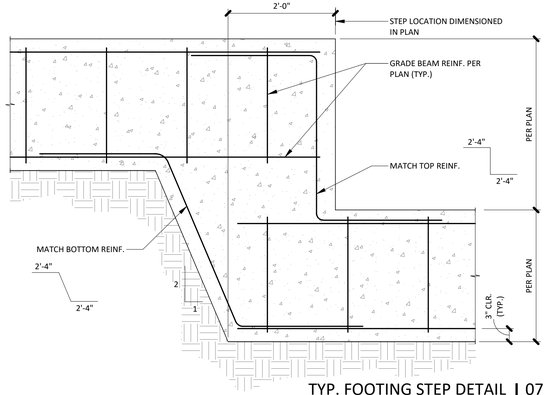
STANDARD 90° HOOK TABLE | 04
12" = 1'-0" | S3.1



TYP. RE-ENTRANT CORNER REINF. DETAIL | 05
3/4" = 1'-0" | S3.1



TYP. SLAB REINF. @ DOOR DETAIL | 06
3/4" = 1'-0" | S3.1

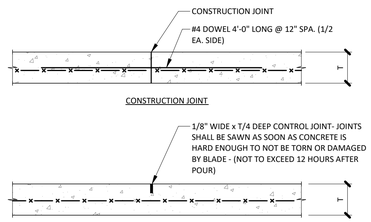


TYP. FOOTING STEP DETAIL | 07
3/4" = 1'-0" | S3.1

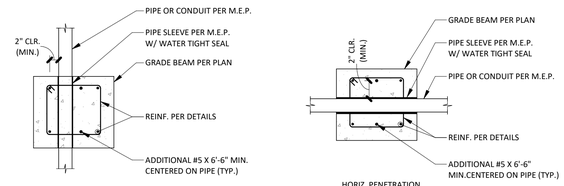
COMPRESSION DEVELOPMENT AND LAP SPLICE LENGTHS GRADE 60 REINFORCEMENT, NORMAL WEIGHT CONCRETE						
BAR SIZE	CONCRETE COMPRESSIVE STRENGTH					
	3000 PSI		4000 PSI		5000 PSI	
	DEV	SPLICE	DEV	SPLICE	DEV	SPLICE
#3	9	12	8	12	7	12
#4	11	15	10	15	9	15
#5	14	19	12	19	12	19
#6	17	23	15	23	14	23
#7	20	27	17	27	16	27
#8	22	30	19	30	18	30
#9	25	34	22	34	21	34
#10	28	39	25	39	23	39
#11	31	43	27	43	26	43

NOTES:
1.) TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL WEIGHT CONCRETE.
2.) COMPRESSION DEVELOPMENT LENGTHS AND COMPRESSION SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.3 AND 12.16, RESPECTIVELY.
3.) ALL VALUES ARE SHOWN IN INCHES
4.) COMPRESSION SPLICE PERMISSIBLE ONLY WHERE SPECIFICALLY NOTED
5.) TABLE IS NOT APPLICABLE FOR EPOXY-COATED REINFORCEMENT.
6.) "SIDE LAP" ALL LAP SPLICES TO MAINTAIN SPECIFIED CONCRETE COVER.
7.) WHEN BARS OF A DIFFERENT SIZE ARE LAP SPLICED, THE SPLICE LENGTH SHALI BE THE LARGER OF THE DEVELOPMENT LENGTH OF THE LARGER BAR, OR THE SPLICE LENGTH OF THE SMALLER BAR.

COMPRESSION DEVEL. & LAP SPLICE TABLE | 10
1/2" = 1'-0" | S3.1



TYP. CONTROL & CONST. JOINT DETAIL | 11
3/4" = 1'-0" | S3.1



NOTE:

1.) CENTER BAR IN GRADE BEAM ALLOWED TO BE MOVED TO PROVIDE 2" CLEAR BY PIPING. ADD #5 ON OPPOSITE SIDE OF PIPING EXTENDING 3'-0" EACH SIDE OF PIPE.

2.) COORDINATE LOCATION OF PIPING WITH M.E.P. ACCEPTABLE TO TURN PIPE IN THE MIDDLE THIRD OF GRADE BEAM AND EXIT THROUGH THE SIDE OF THE GRADE BEAM. ADDITIONAL #5 BAR SHOWN ONLY REQUIRED WHEN PIPING PASSES THROUGH TOP OR BOTTOM OF GRADE BEAM.

TYPICAL GRADE BEAM PENETRATION DETAILS | 13
3/4" = 1'-0" | S3.1

TENSION LAP SPLICE LENGTHS (in) GRADE 60 UNCOATED BARS f'c=3000 psi					
BAR SIZE	LAP CLASS	TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	22	32	17	25
	B	28	42	22	32
#4	A	29	43	22	33
	B	37	56	29	43
#5	A	36	54	28	41
	B	47	70	36	54
#6	A	43	64	33	50
	B	56	84	43	64
#7	A	63	94	48	72
	B	81	122	63	94
#8	A	72	107	55	82
	B	93	139	72	107
#9	A	81	121	62	93
	B	105	157	81	121
#10	A	91	136	70	105
	B	118	177	91	136
#11	A	101	151	78	116
	B	131	196	101	151

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.

2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY.

3. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.

4. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER-TO-CENTER SPACING OF THE BARS ARE DEFINED AS:

BEAMS OR COLUMNS:
CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (2) BAR DIAMETERS

CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (2) BAR DIAMETERS

ALL OTHERS:
CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (3) BAR DIAMETERS

CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (3) BAR DIAMETERS

5. LAP CLASS A VALUES ARE THE REQUIRED TENSION DEVELOPMENT LENGTHS, ld; LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A - 1.0ld AND CLASS B = 1.3ld (ACI 318, SECTION 12.15.1)

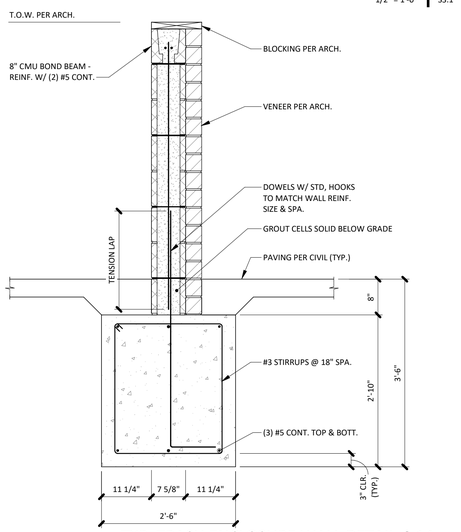
6. LAP CLASS B SHALL BE USED FOR ALL CASES UNLESS APPROVED BY E.O.R

7. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.

8.) LENGTHS SHOWN ARE FOR UNCOATED BARS. LENGTHS SHOWN SHALL BE MULTIPLIED BY 1.2 FOR ALL EXPOXY COATED BARS (ACI 318 SECTION 12.2.4)

9.) WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, THE SPLICE LENGTH FOR THE LARGER BAR SHALL BE USED.

LAP SPLICE LENGTHS f'c=3000 psi | 08
1/2" = 1'-0" | S3.1



TYP. TRASH ENCLOSURE WALL DETAIL | 14
3/4" = 1'-0" | S3.1

TENSION LAP SPLICE LENGTHS (in) GRADE 60 UNCOATED BARS f'c=4000 psi					
BAR SIZE	LAP CLASS	TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	19	28	15	22
	B	24	36	19	28
#4	A	25	37	19	29
	B	32	48	25	37
#5	A	31	47	24	36
	B	40	60	31	47
#6	A	37	56	29	43
	B	48	72	37	56
#7	A	54	81	42	63
	B	70	106	54	81
#8	A	62	93	48	72
	B	80	121	62	93
#9	A	70	105	54	81
	B	91	136	70	105
#10	A	79	118	61	91
	B	102	153	79	118
#11	A	87	131	67	101
	B	113	170	87	131

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.

2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE BASED ON ACI 318, SECTIONS 12.2.2 AND 12.15, RESPECTIVELY.

3. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN INCHES.

4. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER-TO-CENTER SPACING OF THE BARS ARE DEFINED AS:

BEAMS OR COLUMNS:
CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (2) BAR DIAMETERS

CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (2) BAR DIAMETERS

ALL OTHERS:
CASE 1: COVER AT LEAST (1) BAR DIAMETER AND C.-C. SPACING AT LEAST (3) BAR DIAMETERS

CASE 2: COVER LESS THAN (1) BAR DIAMETER AND C.-C. SPACING LESS THAN (3) BAR DIAMETERS

5. LAP CLASS A VALUES ARE THE REQUIRED TENSION DEVELOPMENT LENGTHS, ld; LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS; CLASS A - 1.0ld AND CLASS B = 1.3ld (ACI 318, SECTION 12.15.1)

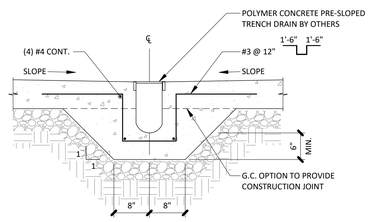
6. LAP CLASS B SHALL BE USED FOR ALL CASES UNLESS APPROVED BY E.O.R

7. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.

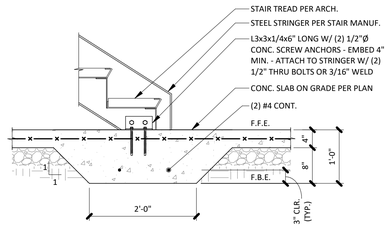
8.) LENGTHS SHOWN ARE FOR UNCOATED BARS. LENGTHS SHOWN SHALL BE MULTIPLIED BY 1.2 FOR ALL EXPOXY COATED BARS (ACI 318 SECTION 12.2.4)

9.) WHEN BARS OF DIFFERENT SIZES ARE LAP SPLICED, THE SPLICE LENGTH FOR THE LARGER BAR SHALL BE USED.

LAP SPLICE LENGTHS f'c=4000 psi | 09
1/2" = 1'-0" | S3.1



TYP. FLOOR DRAIN DETAIL | 15
3/4" = 1'-0" | S3.1



STEEL STAIR STRINGER | 16
3/4" = 1'-0" | S3.1

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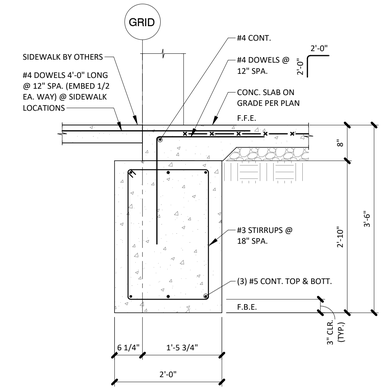
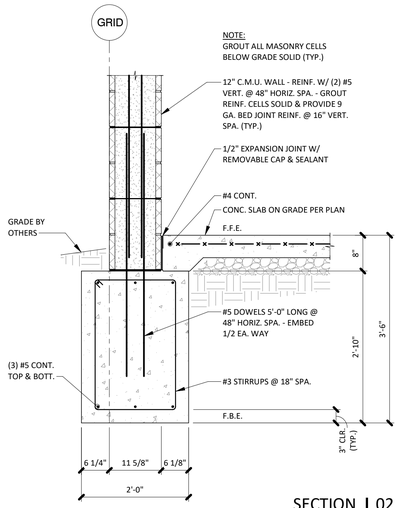
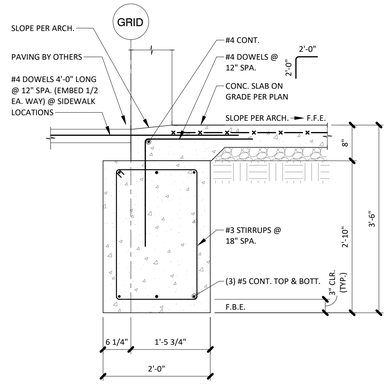


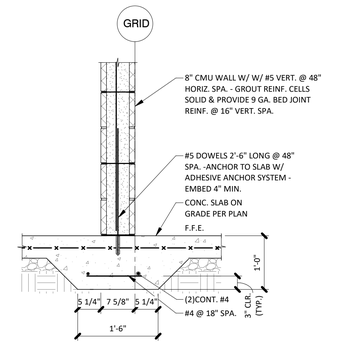
SECTION | 01
3/4" = 1'-0" | S3.2



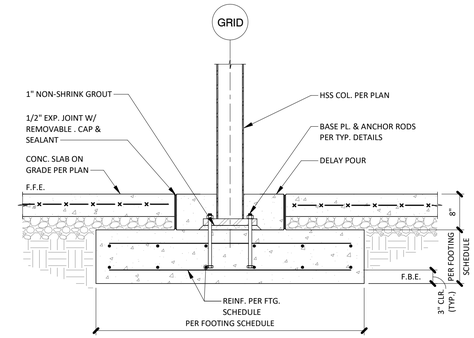
SECTION | 02
3/4" = 1'-0" | S3.2



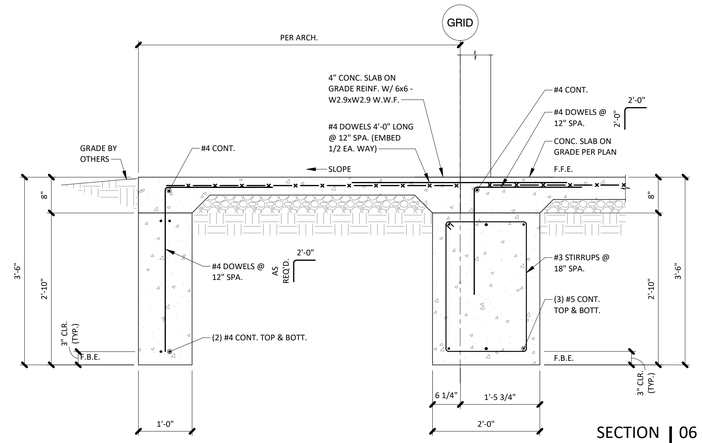
SECTION | 03
3/4" = 1'-0" | S3.2



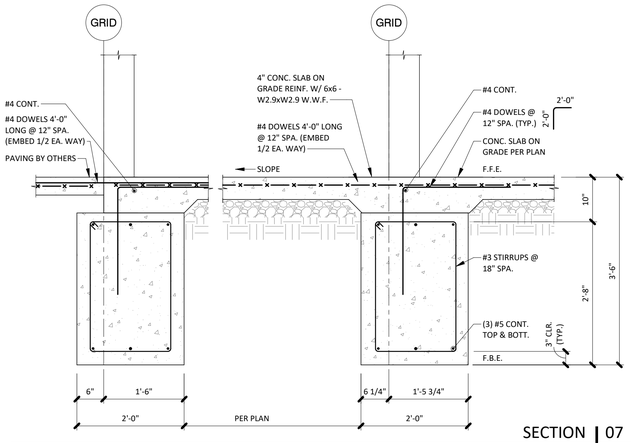
SECTION | 04
3/4" = 1'-0" | S3.2



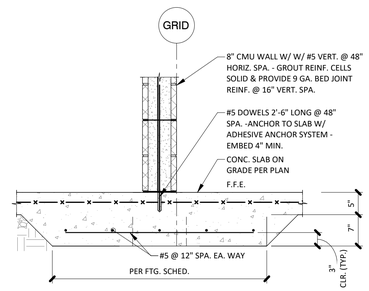
SECTION | 05
3/4" = 1'-0" | S3.2



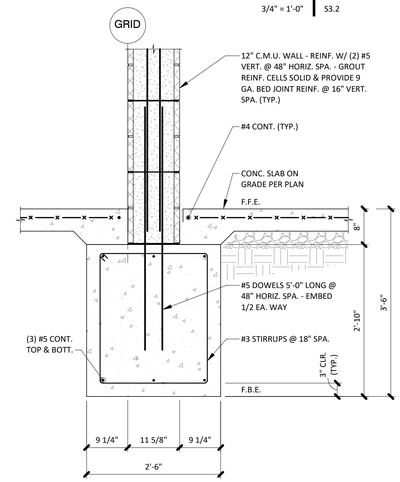
SECTION | 06
3/4" = 1'-0" | S3.2



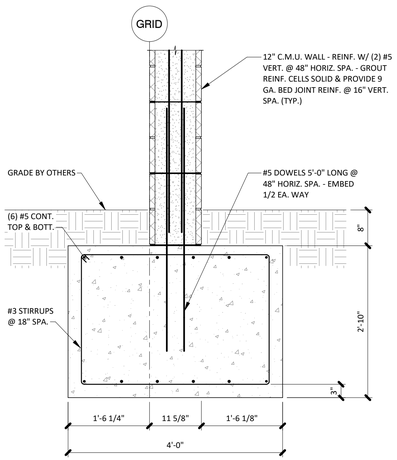
SECTION | 07
3/4" = 1'-0" | S3.2



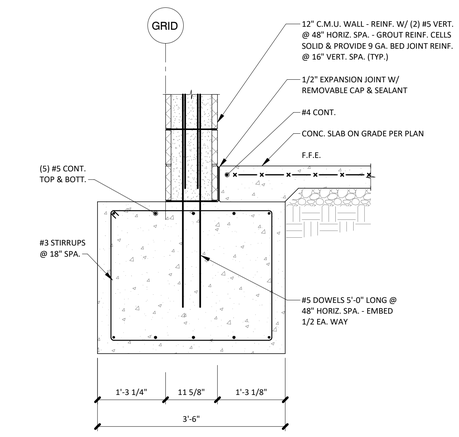
SECTION | 08
3/4" = 1'-0" | S3.2



SECTION | 09
3/4" = 1'-0" | S3.2



SECTION | 10
3/4" = 1'-0" | S3.2



SECTION | 11
3/4" = 1'-0" | S3.2

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Foundation Sales & Detail Center

a redevelopement for
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△

sheet number
S3.2
FOUNDATION DETAILS

drawing type
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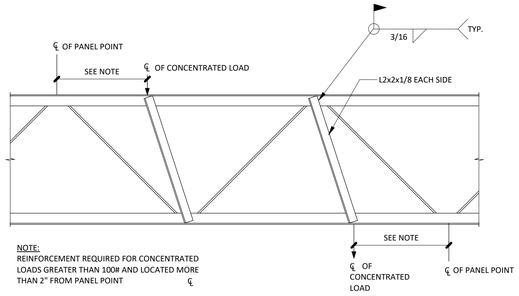
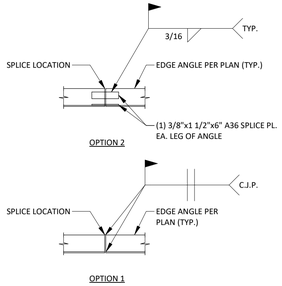


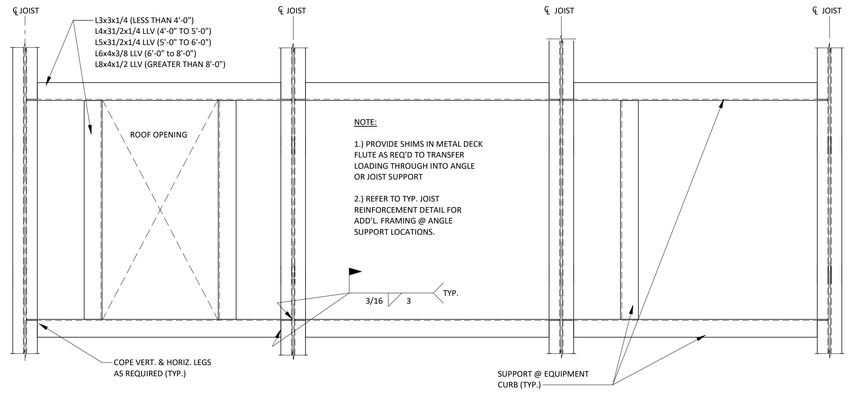
TYP. JOIST REINFORCEMENT DETAIL | 01

3/4" = 1'-0" | S4.1



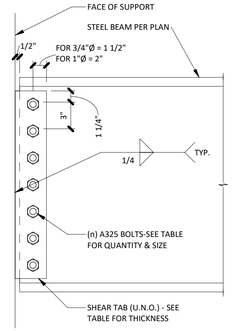
EDGE ANGLE SPLICE DETAIL | 02

3/4" = 1'-0" | S4.1



TYP. ROOF OPENING & EQUIP. SUPPORT FRAMING DETAIL | 03

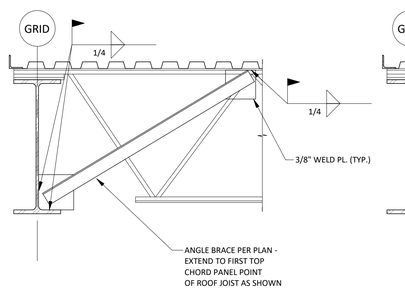
3/4" = 1'-0" | S4.1



BEAM DEPTH	# OF (n) A325 BOLTS	BOLT Ø	SHEAR TAB THICKNESS
12"	3	3/4"	3/8"
14"	3	3/4"	3/8"
16"	4	3/4"	3/8"
18"	5	3/4"	3/8"
21"	6	1"	7/16"
24"	7	1"	7/16"
27"	8	1"	7/16"
30"	9	1"	7/16"
34"	10	1"	7/16"
36"	11	1"	7/16"

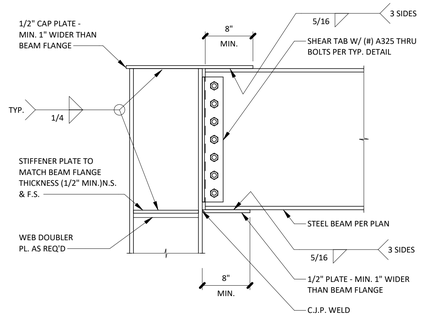
TYP. SHEAR TAB CONNECTION DETAIL | 04

1 1/2" = 1'-0" | S4.1



TYP. BEAM BOTTOM FLANGE BRACE DETAIL - JOIST | 05

3/4" = 1'-0" | S4.1



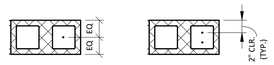
TYP. MOMENT CONN. DETAIL | 06

1" = 1'-0" | S4.1

TYPICAL SPLICE LENGTHS FOR MASONRY BLOCK - STRENGTH DESIGN													
BLOCK WIDTH	CASE A - BARS CENTERED							CASE B - (2) BARS					
	VERTICAL BAR SIZE							VERTICAL BAR SIZE					
	#3	#4	#5	#6	#7	#8	#9	#3	#4	#5	#6	#7	#8	#9
6" BLOCK	14"	18"	28"	53"	-	-	-	-	-	-	-	-	-	-
8" BLOCK	14"	18"	22"	38"	52"	72"	*	15"	25"	39"	54"	63"	-	-
10" BLOCK	14"	18"	22"	35"	40"	61"	*	15"	25"	39"	54"	63"	72"	*
12" BLOCK	14"	18"	22"	35"	40"	61"	*	14"	22"	35"	54"	63"	72"	*

SYMBOLS:
- - REINFORCING CONFIGURATION NOT PERMISSIBLE
- * MECHANICAL TENSION SPLICE REQ'D

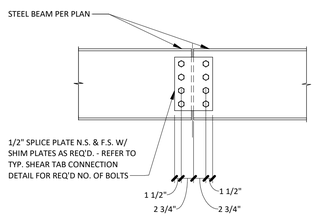
NOTES:
1) MECH. TENSION SPLICE CAN BE FOR ANY BAR SIZE IF NOT NOTED.
2) FOR USE WITH F'M=2,000 psi & fy = 60,000 psi



MASONRY SPLICE TABLE | 07

3/4" = 1'-0" | S4.1

NOTE:
REFER TO PLAN FOR SPLICE LOCATIONS. IF LOCATIONS ARE NOT NOTED, CONTACT E.O.R. PRIOR TO FABRICATION & CONSTRUCTION.



TYP. SPLICE DETAIL | 08

3/4" = 1'-0" | S4.1

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Project Number 20-467

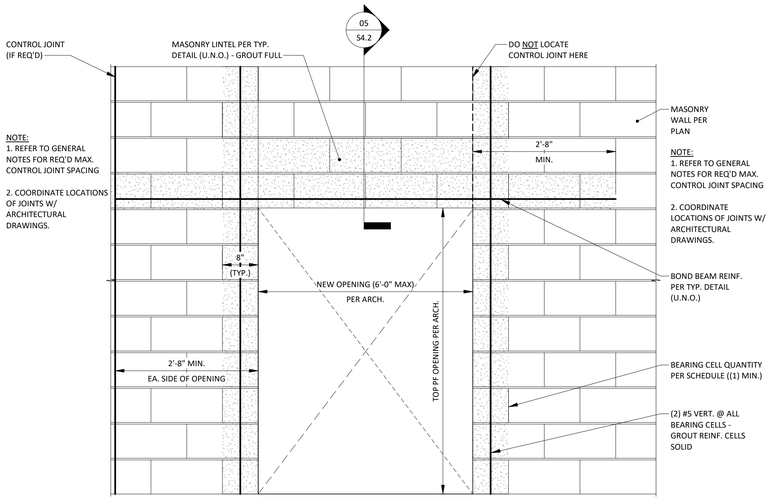
STATE OF MISSOURI
JUSTIN E. BURGOON
NUMBER PE-2014015015
2021-02-23
PROFESSIONAL ENGINEER

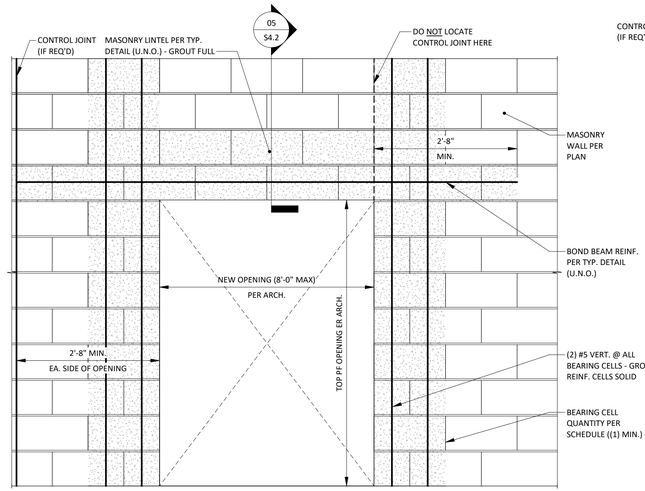
Typical Details & Detail Center

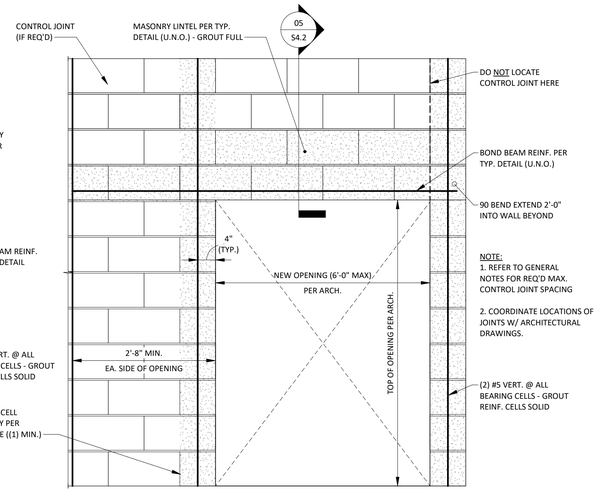
a redevelopement for
Automotive Sales
2100 NE Independence Ave
Lee's Summit, Missouri 64064

date
02.23.2021
drawn by
Author
checked by
Checker
revisions

sheet number
S4.1
TYPICAL FRAMING DETAILS
drawing type
project number

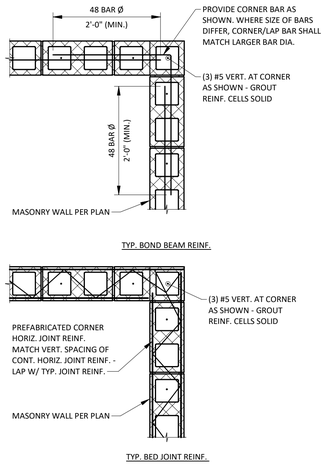






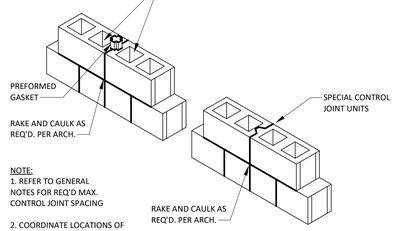
TYP. MASONRY WALL LINTEL DETAIL - BOND BEAM | 01

3/4" = 1'-0" | S4.2



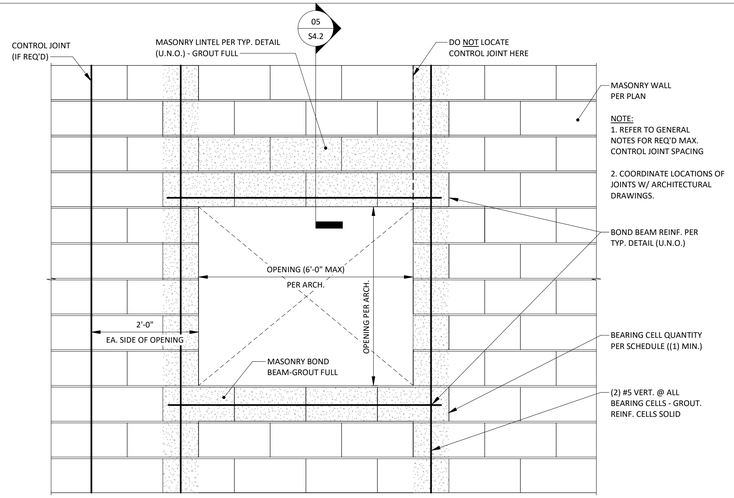
CORNER HORIZ. JOINT REINF. | 02

3/4" = 1'-0" | S4.2



MASONARY JOINT DETAILS | 03

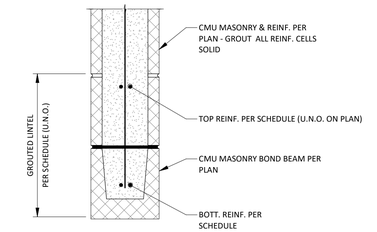
3/4" = 1'-0" | S4.2



TYP. MASONRY WALL WINDOW OPENING DETAIL | 04

3/4" = 1'-0" | S4.2

BOND BEAM SCHEDULE					
TAG	MAX. SPAN	GROUTED BOND BEAM DEPTH	BOTT. REINF.	TOP REINF.	# OF BRG. CELLS
B1	4'-0"	8"	(2) #5	N/A	2
B2	6'-0"	12"	(2) #5	N/A	2
B3	8'-0"	16"	(2) #5	N/A	2
B4	12'-0"	24"	(2) #6	(2) #5	2



NOTE:
1.) FOR OPENING WIDTHS EXCEEDING WIDTHS SHOWN & NOT SHOWN ELSE WHERE ON DRAWINGS, CONTACT E.O.R. PRIOR TO CONSTRUCTION.

2.) BOND BEAM SIZES & REINFORCEMENT SHOWN IN PROJECT SPECIFIC DETAILS GOVERN OVER TYP. DETAILS.

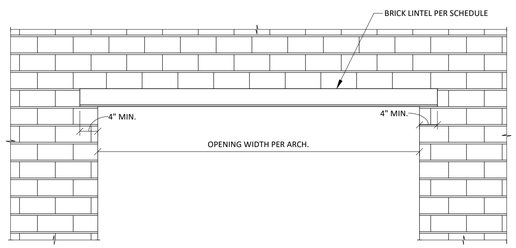
3.) EXTEND ALL BARS AND GROUTING BEYOND JAMBS PER TYP. DETAILS

4.) REFER TO TYP. DETAILS FOR ADD'L. INFORMATION.

TYP. BOND BEAM DETAIL | 05

1 1/2" = 1'-0" | S4.2

LINTEL SCHEDULE	
OPENING WIDTH	BRICK LINTEL SIZE
4'-0"	L5X5X3/8



NOTES:
1.) FOR OPENING WIDTHS EXCEEDING WIDTHS SHOWN, CONTACT E.O.R. FOR REQ'D. LINTEL SIZE PRIOR TO CONSTRUCTION.

2.) LINTEL SIZE SHOWN IN PROJECT SPECIFIC DETAILS GOVERN OVER TYP. DETAILS.

3.) COORD. LINTEL LOCATIONS & ELEVATIONS W/ ARCHITECTURAL DRAWINS.

TYP. BRICK LINTEL DETAIL | 06

3/4" = 1'-0" | S4.2

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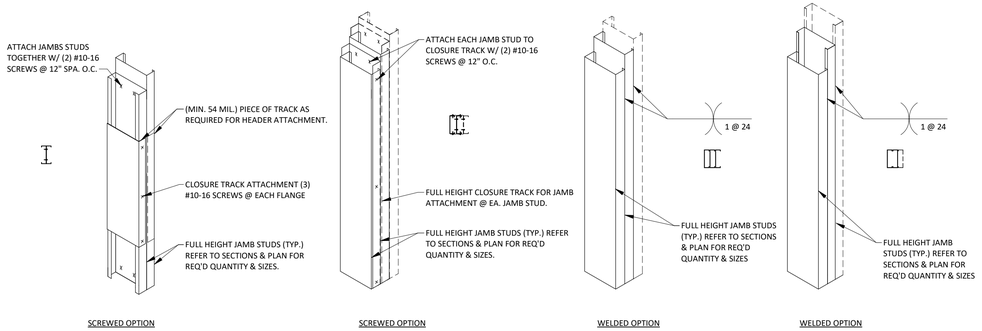
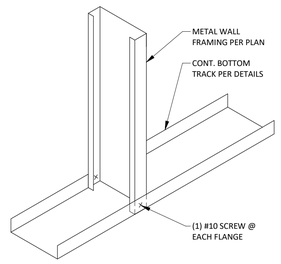
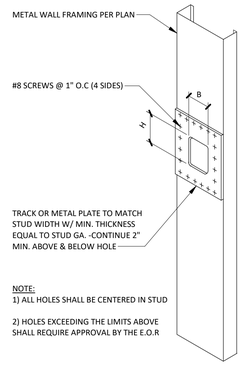


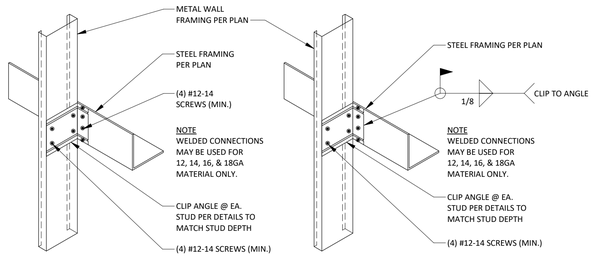
BUILT-UP MEMBER DETAIL | 01
1/2" = 1'-0" | S4.3



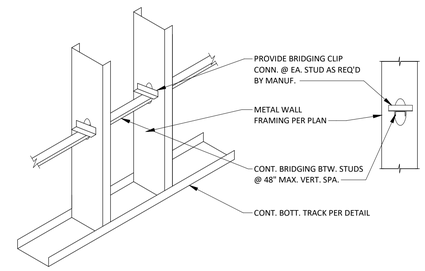
STUD TO TRACK CONNECTION (BOTTOM) | 02
3/4" = 1'-0" | S4.3



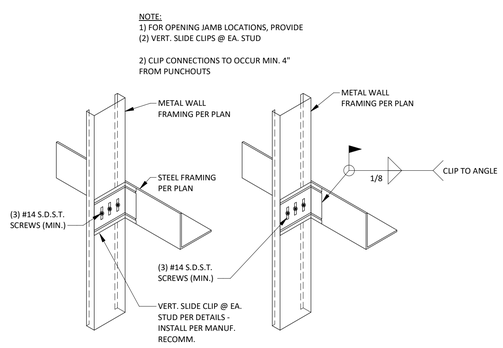
WEB REINFORCING DETAIL | 03
3/4" = 1'-0" | S4.3



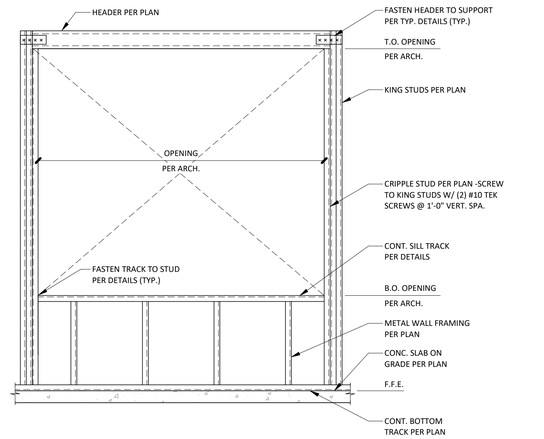
TYP. CLIP CONNECTION DETAIL | 04
1/2" = 1'-0" | S4.3



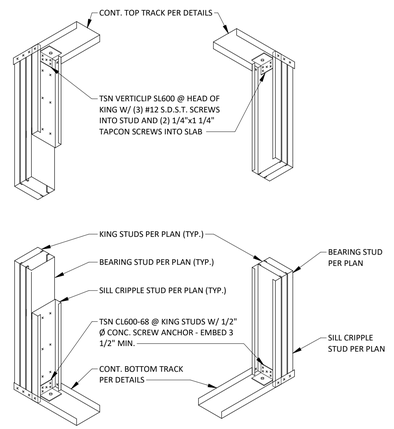
TYP. WALL BRIDGING DETAIL | 05
1/2" = 1'-0" | S4.3



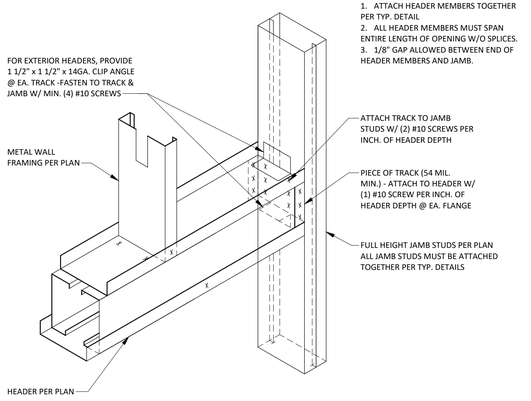
TYP. SLIDE CLIP CONNECTION DETAIL | 06
1/2" = 1'-0" | S4.3



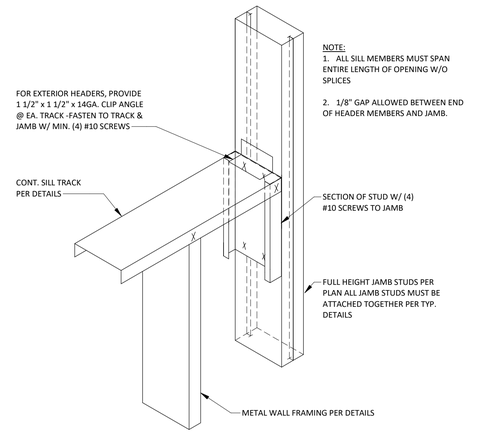
TYP. HEADER/WALL OPENING DETAIL | 07
1/2" = 1'-0" | S4.3



BUILT UP JAMB DETAIL | 08
3/8" = 1'-0" | S4.3



HEADER - JAMB DETAIL | 09
3/4" = 1'-0" | S4.3

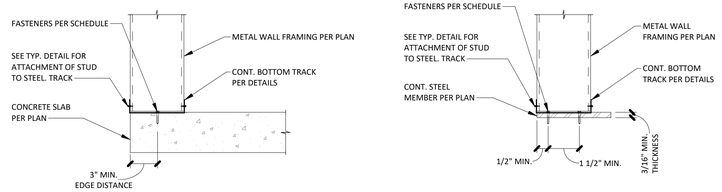


SILL - JAMB DETAIL | 10
3/4" = 1'-0" | S4.3

FASTENERS @ CONCRETE	
LOCATION	NUMBER OF FASTENERS REQUIRED
TYPICAL FRAMING	(1) 0.157"Ø P.D.F @ 8" O.C.
JAMB STUDS	(2) 0.157"O P.D.F @ EACH JAMB (SEE NOTE #3)

FASTENERS @ STEEL	
LOCATION	NUMBER OF FASTENERS REQUIRED
TYPICAL FRAMING	(2) 0.157"Ø P.D.F @ 8" O.C.
JAMB STUDS	(4) 0.157"Ø P.D.F @ EACH JAMB

NOTE:
1) 1" MIN. EMBED REQ'D FOR ALL P.D.F'S
2) MAINTAIN 4" MIN. FASTENER SPACING FOR ALL FASTENERS
3) FOR OPENINGS > 6'-0" PROVIDE TSN CL CLIP (OR EQ.)
4) REFER TO DETAILS FOR ADD'L BOTT. TRACK-TO-STRUCTURE FASTENER REQUIREMENTS



TYPICAL BASE DETAILS | 11
3/4" = 1'-0" | S4.3

a redevelopement for
Automotive Sales & Detail Center
2100 NE Independence Ave
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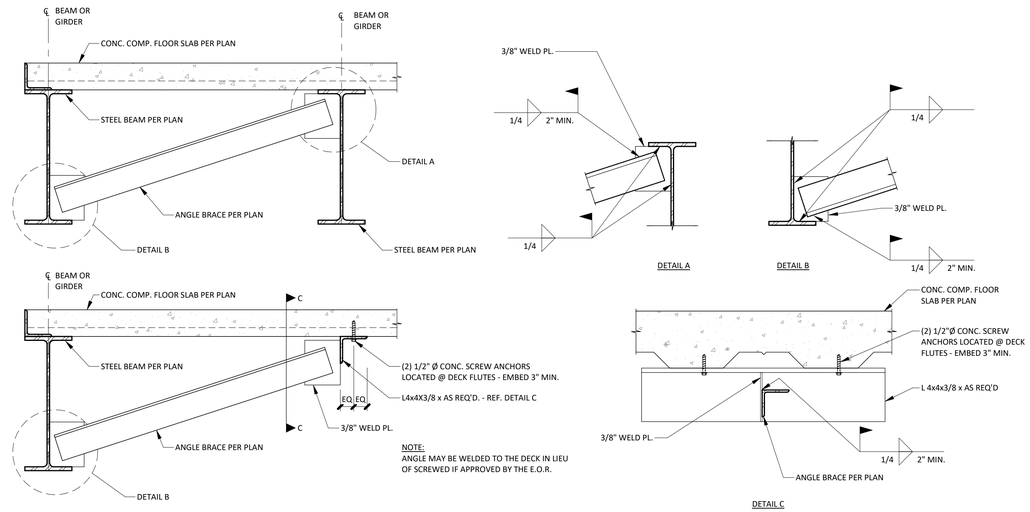
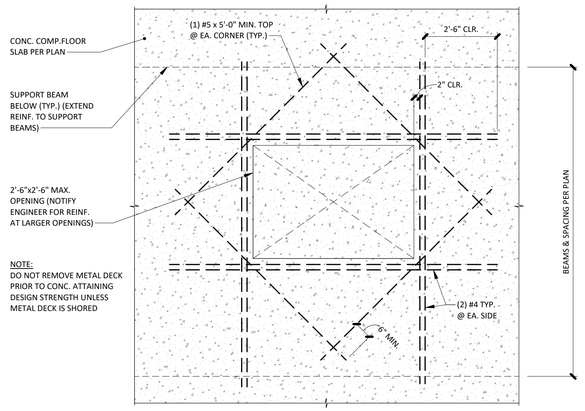
drawing type
project number



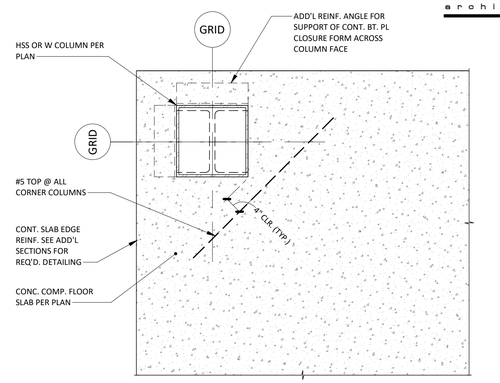
TYP. BEAM BOTTOM FLANGE BRACE DETAIL | 01

3/4" = 1'-0" | S4.4



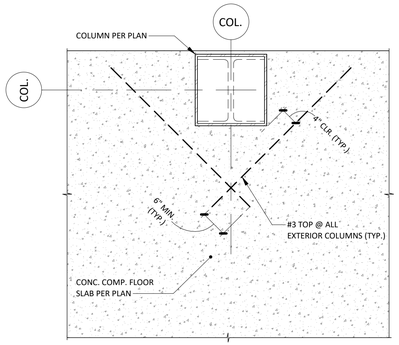
TYP. COMP. FLR. REINF. @ OPENING DETAIL | 02

3/4" = 1'-0" | S4.4



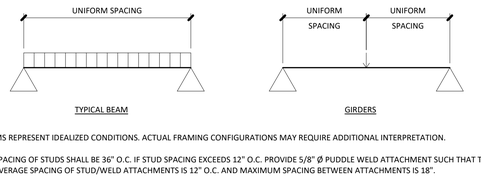
TYP. COMP. MTL. DECK @ CORNER COL. DETAIL | 03

3/4" = 1'-0" | S4.4



TYP. COMP. DECK @ EXTERIOR COL. DETAIL | 04

3/4" = 1'-0" | S4.4

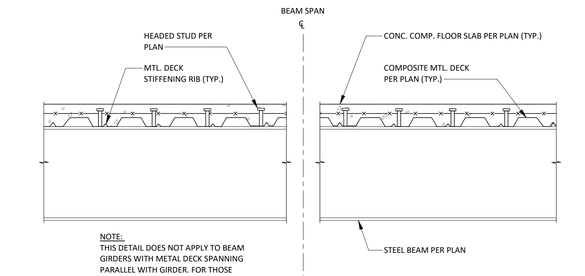


NOTES:

1. ALL DIAGRAMS REPRESENT IDEALIZED CONDITIONS. ACTUAL FRAMING CONFIGURATIONS MAY REQUIRE ADDITIONAL INTERPRETATION.
2. MAXIMUM SPACING OF STUDS SHALL BE 36" O.C. IF STUD SPACING EXCEEDS 12" O.C. PROVIDE 5/8" Ø PUDDLE WELD ATTACHMENT SUCH THAT THE MAXIMUM AVERAGE SPACING OF STUD/WELD ATTACHMENTS IS 12" O.C. AND MAXIMUM SPACING BETWEEN ATTACHMENTS IS 18".
3. THE NUMBER OF STUDS PER BEAM SHOWN ON THE DRAWINGS IS BASED ON AN ASSUMED DESIGN VALUE OF 13.3 K/STUD. THE ACTUAL NUMBER OF STUDS PER BEAM (N) MAY VARY BASED ON RIB WIDTH, DECK DEPTH, NUMBER OF STUDS PER CELL, DECK RIB ORIENTATION, ETC. AS PER AISC SPECIFICATIONS FOR COMPOSITE CONSTRUCTION. THE METAL DECK CONTRACTOR SHALL SUBMIT ALL CALCULATIONS VERYIFYING THE HORIZONTAL SHEAR CAPACITY OF SHEAR STUDS DETAILS ON SHOP DRAWINGS AND PROVIDE THE STUDS REQUIRED.
4. SHEAR CONNECTOR PLACEMENT SHALL BE FULLY DETAILED ON METAL DECK SHOP DRAWINGS.

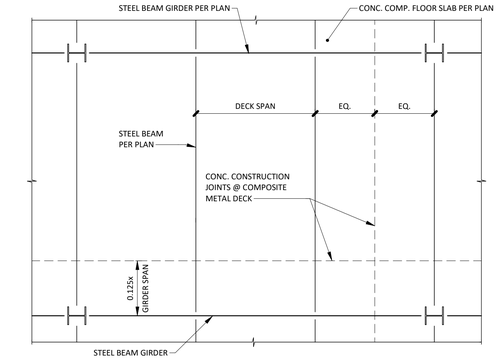
TYP. STUD PLACEMENT DETAIL | 05

3/4" = 1'-0" | S4.4



TYP. STUD POSITION DETAIL | 06

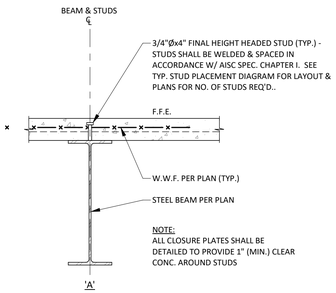
3/4" = 1'-0" | S4.4

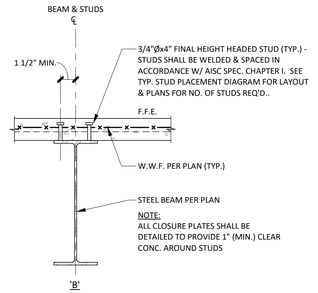


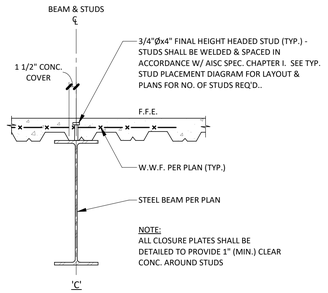
NOTE:
G.C TO SUBMIT CONSTRUCTION JOINT PLAN W/ CONC. PLACEMENT SEQUENCE FOR REVIEW W/ METAL DECK DRAWINGS

TYP. COMP. FLR. JOINT DETAIL | 07

3/4" = 1'-0" | S4.4

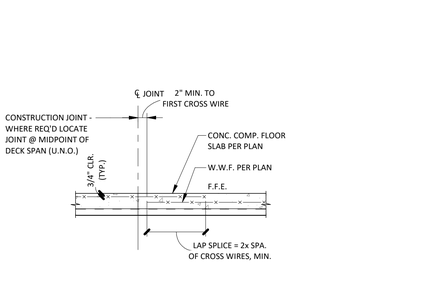






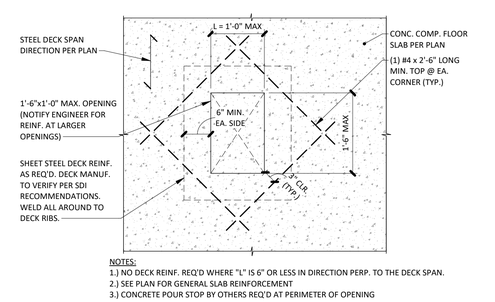
TYP. COMP. BEAMS W/ SHEAR STUDS DETAIL | 08

3/4" = 1'-0" | S4.4



TYP. COMPOSITE DECK SLAB CONSTRUCTION JOINT | 09

3/4" = 1'-0" | S4.4



NOTES:
1.) NO DECK REINF. REQ'D WHERE "L" IS 6" OR LESS IN DIRECTION PERP. TO THE DECK SPAN.
2.) SEE PLAN FOR GENERAL SLAB REINFORCEMENT
3.) CONCRETE POUR STOP BY OTHERS REQ'D AT PERIMETER OF OPENING

TYP. COMP. STEEL DECK SLAB OPENING | 10

3/4" = 1'-0" | S4.4

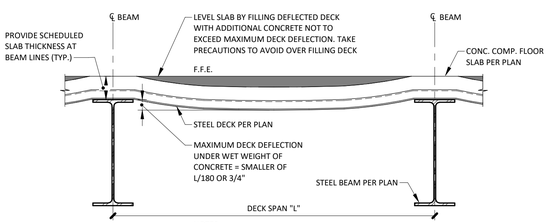
NOTES:

1.) COMPOSITE STEEL BEAMS HAVE BEEN DESIGNED AS AN UNSHORED CONSTRUCTION CONDITION. THE MAX EXPECTED DEFLECTION FOR EACH BEAM IS L/360 OR 3/4" (WHICH EVER IS SMALLER) FOR CONSTRUCTION WET CONCRETE PLACEMENT LOADING CONDITION.

2.) COMPOSITE STEEL BEAMS W/ CAMBER ARE DESIGNED SO THAT THE CAMBER IS TO DIMINISH DUE TO DEFLECTION UNDER THE CONSTRUCTION WET CONCRETE PLACEMENT LOADING CONDITION. SPECIAL CARE SHALL BE TAKEN DURING CONSTRUCTION TO ENSURE DEFLECTION IS ABLE TO HAPPEN.

CAMBER AND DEFLECTION NOTES | 11

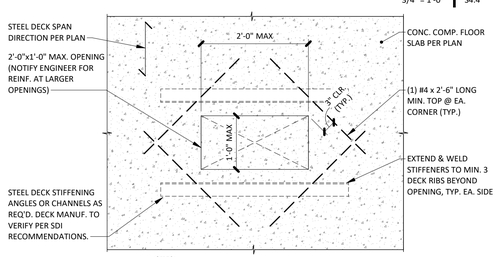
1 1/2" = 1'-0" | S4.4



NOTES:
1.) SCREED GUIDES SHALL BE PLACED SUCH THAT THE SCHEDULED SLAB THICKNESS ARE ACHIEVED AT THE BEAM LINES
2.) PROVIDE DECK SHORING AS REQ'D. BY SDI.

STEEL DECK DEFLECTION COMPENSATION DETAIL | 12

3/4" = 1'-0" | S4.4



NOTES:
1.) SEE PLAN FOR GENERAL SLAB REINFORCEMENT
2.) CONCRETE POUR STOP BY OTHERS REQ'D AT PERIMETER OF OPENING

TYP. STEEL DECK SLAB OPENING | 13

3/4" = 1'-0" | S4.4

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Project Number 20-467

STATE OF MISSOURI
JUSTIN E. BURGOON
NUMBER PE-2014015015
PROFESSIONAL ENGINEER
2021-02-23

Lee's Summit, Missouri 64064
2100 NE Independence Ave
a redevelopement for Automotive Sales & Detail Center

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Author
checked by
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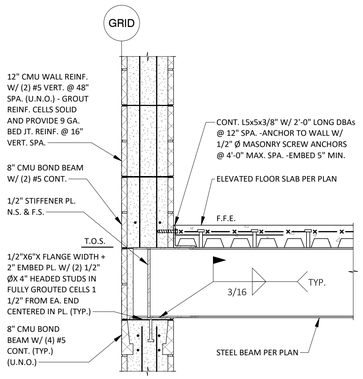
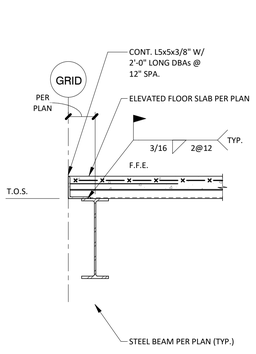
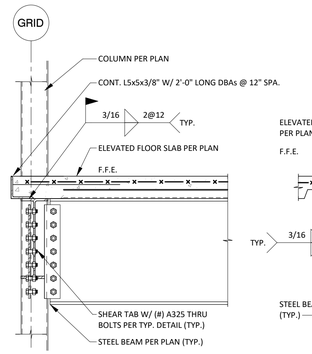
sheet number
S4.4
TYPICAL FRAMING DETAILS
drawing type
project number



SECTION | 01
3/4" = 1'-0" | S4.5



SECTION | 02
3/4" = 1'-0" | S4.5



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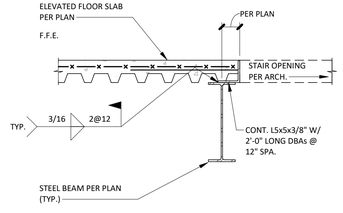

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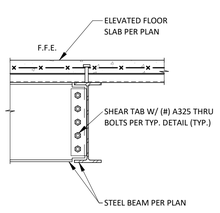

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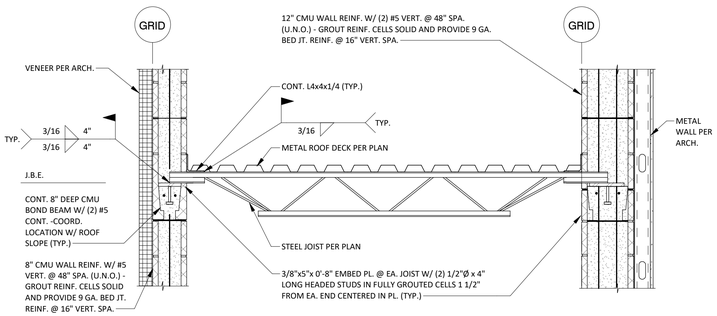


SECTION | 06
3/4" = 1'-0" | S4.5

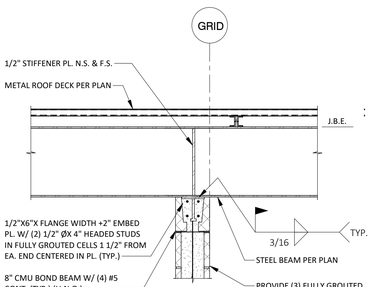
SECTION | 07
3/4" = 1'-0" | S4.5

SECTION | 08
3/4" = 1'-0" | S4.5

SECTION | 09
3/4" = 1'-0" | S4.5

SECTION | 10
3/4" = 1'-0" | S4.5

SECTION | 15
3/4" = 1'-0" | S4.5



SECTION | 11
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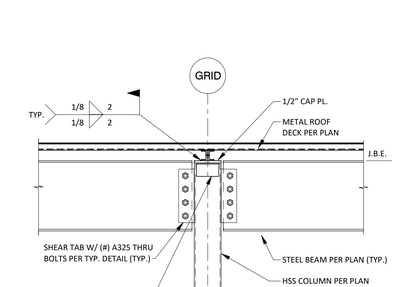

SECTION | 12
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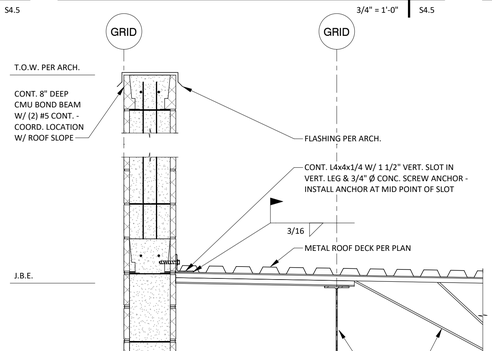

SECTION | 13
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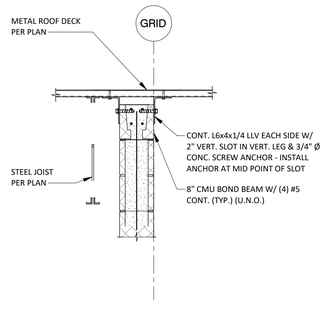

SECTION | 14
3/4" = 1'-0" | S4.5

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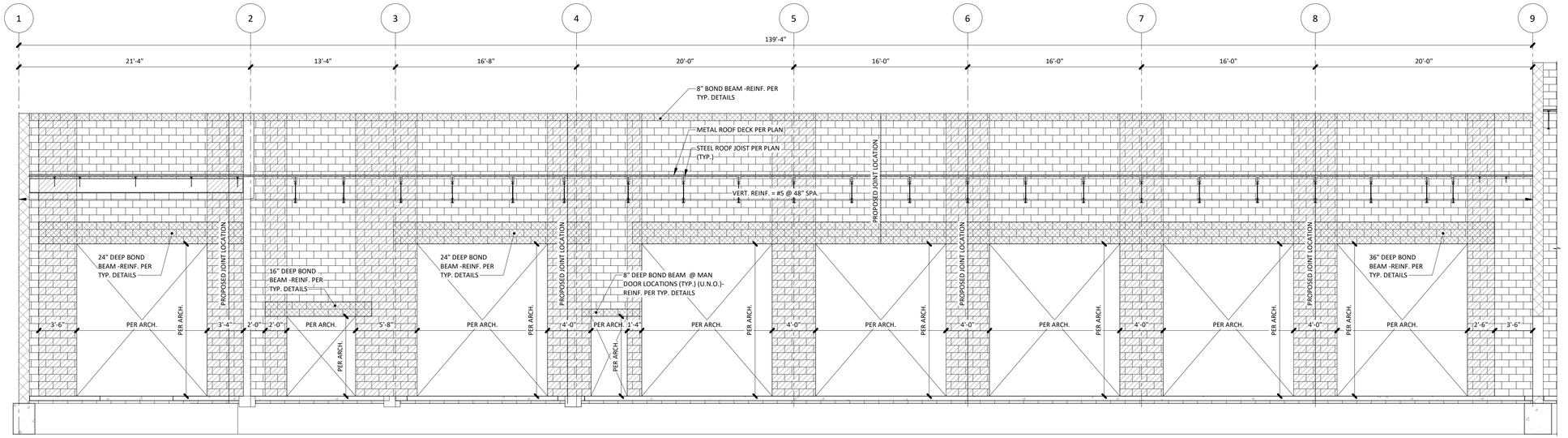
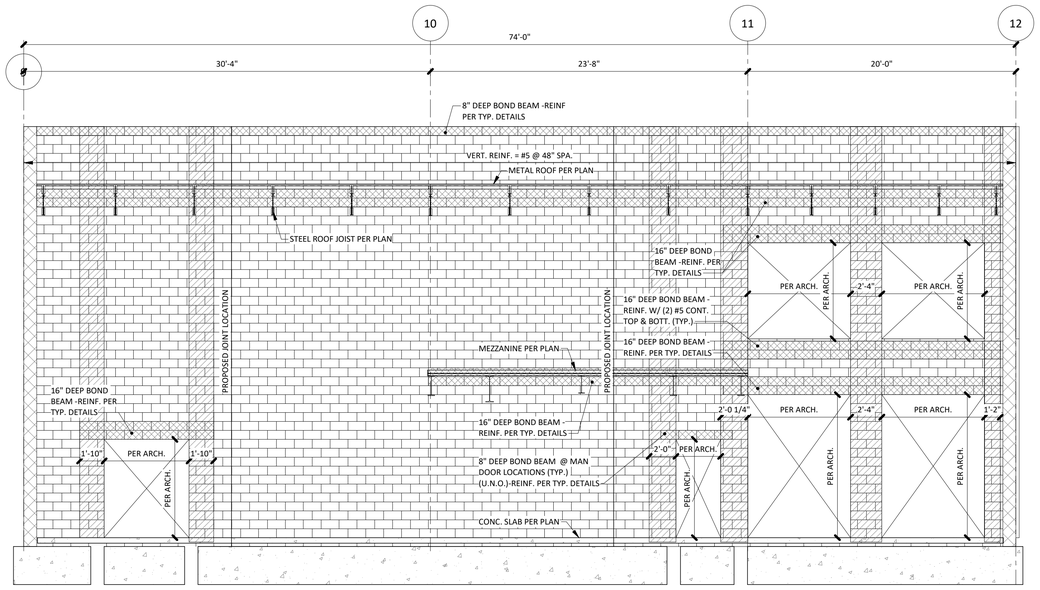


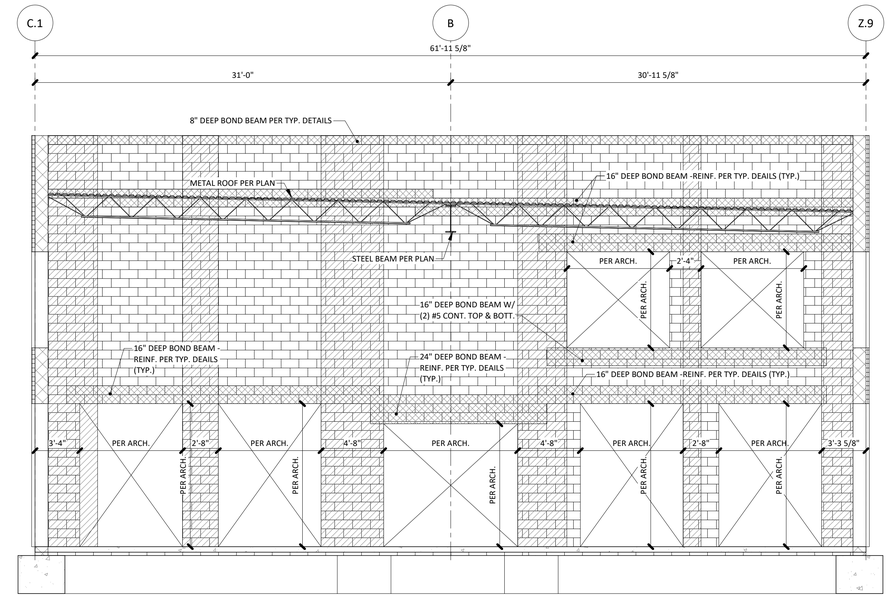
NORTH INTERIOR ELEVATION | 01

3/16" = 1'-0" | S4.6



NORTH INTERIOR ELEVATION | 02

3/16" = 1'-0" | S4.6



EAST INTERIOR ELEVATION | 03

3/16" = 1'-0" | S4.6

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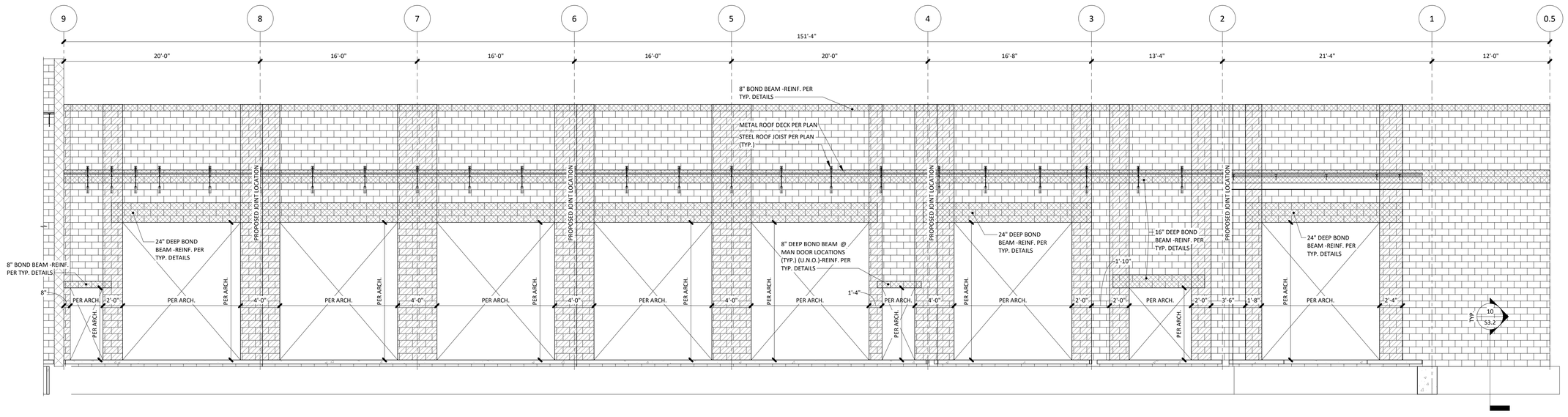

SOUTH INTERIOR ELEVATION | 01

3/16" = 1'-0" | S4.7

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MASONRY ELEVATIONS

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MECHANICAL SPECIFICATIONS

1. GENERAL PROVISIONS:

A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.

B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.

C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.

D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.

E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.

F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.

G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.

2. OPERATION AND MAINTENANCE MANUALS:

A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.

B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.

C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.

3. MANUFACTURERS:

A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.

4. MOTORS:

A. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.

5. TESTING, BALANCING, AND CLEANING:

A. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.

B. SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.

C. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

D. NATURAL GAS PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 50 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

E. DUCTWORK AND PIPING SHALL BE BALANCED BY QUALIFIED BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES.

F. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CHLORINATED IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION, SAMPLES OF WATER IN THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH.

6. PLUMBING:

A. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.

B. ALL EXPOSED WASTE PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.

C. PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.

D. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.

E. CLEANOUTS:

1) VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL.
2) QUARRY TILE FLOOR: JR SMITH #4200, OR EQUAL.
3) CARPETED FLOOR: JR SMITH #4020-Y, OR EQUAL.
4) UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL.
5) WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.
6) WAREHOUSE FLOORS/FORK TRUCK AREAS: JR SMITH #4100, OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND ROUND ADJUSTABLE SCORIATED EXTRA HEAVY DUTY NICKEL BRONZE TOP.
7) GRADE: JR SMITH #4256, OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND COVER.

F. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS.

G. WATER HEATERS:

1) EVERY WATER HEATER SHALL HAVE AN APPROVED MEANS INSTALLED ON THE COLD WATER SUPPLY LINE ABOVE THE EQUIPMENT TO PREVENT SIPHONING OF A STORAGE WATER HEATER OR TANK.
2) BOTTOM FED WATER HEATERS AND TANKS CONNECT TO WATER HEATERS SHALL HAVE A VACCUM RELIEF VALVE INSTALLED. ANSI Z21.22.
3) STORAGE HEATERS OPERATING ABOVE ATMOSPHERIC PRESSURE SHALL HAVE AN APPROVED PRESSURE RELIEF VALVE AND/OR TEMPERATURE RELIEF VALVE.

H. ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

1) INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
2) INSTALL 3" AND LARGER PIPE AT 1/8" PER FOOT FALL.

I. ALL SEWER PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES.

1) INSTALL 4" AND SMALLER PIPE AT A MINIMUM OF 2% SLOPE.
2) INSTALL 6" AND LARGER PIPE AT A MINIMUM OF 1% SLOPE.

MECHANICAL SPECIFICATIONS (CONTINUED)

7. PIPING:

A. DOMESTIC COLD AND HOT WATER (ABOVEGROUND).

1) TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.
 a) WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200. ANSI B16.22. MSS SP-104.
 b) MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS. ASME B16.22, ASME B16.51, or ASME B16.18. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO IAPMO PS-117 OR ASME B16.51.

2) PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
 a) PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF372 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PW-G", "NSF-61-G" OR OTHER NSF-APPROVED MARKING. ASTM F2023 FOR USE WITH CHLORINATED WATER. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
 b) PEX MECHANICAL, CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE, INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)

3) VALVES
 a) TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE.
 b) TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.
 c) TYPES:
  1. GATE VALVE: JOMAR T/S-301G OR EQUAL. LEAD-FREE NSF 61, ANSI B1.20.1.
  2. GLOBE VALVE: JOMAR TGG OR EQUAL.
  3. BALL VALVE: JOMAR JP100PxP OR EQUAL COMPACT LEAD FREE BRASS BALL VALVE. UL842, CSA 3371-12 & 3371-92, FM, CALIFORNIA CODE AB1953, NSF61 ANNEX G APPROVED.
  4. BALL VALVE: JOMAR T-100NE OR EQUAL. UL842, FM, CSA, NSF 61-8, MSS SP-110

B. DOMESTIC WATER SERVICE, 1"-3"

1) TYPE K SOFT DRAWN COPPER TUBING, ASTM B-88.
 a) Cast Copper Alloy Fittings for Flared Copper Tube, ASME/ANSI B16.26:

2) HDPE, PIGMENTED BLUE THROUGHOUT, CTS SIZES 1"-2" AWWA C901 4710 DR9 PC250
IPS SIZES 2"-3", AWWA C901 4710 DR11 PC200
MATERIAL AND INSTALLATION MUST CONFORM TO WATER DEPARTMENT REQUIREMENTS.

C. LEAD CONTENT OF WATER SUPPLY PIPE AND FITTINGS:

1) PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, UTILIZED IN THE WATER SUPPLY SYSTEM SHALL NOT HAVE MORE THAN 8% LEAD CONTENT.

2) PIPE, PIPE FITTINGS, JOINTS, VALVES, FAUCETS, AND FIXTURE FITINGS UTILIZED TO SUPPLY WATER FOR DRINKING OR COOKING PURPOSES SHALL COMPLY WITH NSF 372 AND SHALL HAVE A WEIGHTED AVERAGE LEAD CONTENT OF 0.25% OR LESS.

D. STORM SEWER, SANITARY SEWER, SAND OIL WASTE, AND VENTS. (UNDERGROUND, INTERIOR TO THE BUILDING).

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 628 FITTINGS SHALL CONFORM TO ASTM D 2661. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235.
2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.
5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

E. STORM SEWER, SANITARY SEWER, SAND OIL WASTE, AND VENTS. (ABOVE GROUND, INTERIOR TO THE BUILDING).

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 628 FITTINGS SHALL CONFORM TO ASTM D 2661. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235. (NOT FOR USE IN A RETURN AIR PLENUM)
2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. (NOT FOR USE IN A RETURN AIR PLENUM)
3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM D 1785 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. (WHERE APPROVED BY LOCAL JURISDICTIONS) (NOT FOR USE IN A RETURN AIR PLENUM)
4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.
5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

F. STORM SEWER, SANITARY SEWER, SAND OIL WASTE, AND VENTS. (UNDERGROUND, EXTERIOR TO THE BUILDING).

1) ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 2680 FITTINGS SHALL CONFORM TO ASTM D 2680. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235.
2) PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4396 FOR PIPE AND 12454 PER ASTM D 1784 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 891. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM F 794. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1866. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
3) PVC SCHEDULE 40 SOLID WALL PIPE AND DWV FITTING SYSTEM: PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1784 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 794. FITTINGS SHALL CONFORM TO ASTM F 794. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
4) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.
5) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.
6) COPPER DWV: DRAINAGE TUBE SHALL CONFORM TO ASTM B306, WROUGHT COPPER FITTINGS, ANSI B-16.29.
7) GALVANIZED STEEL PIPE, WITH MALLEABLE IRON, THREADED FITTINGS, DRAINAGE PATTERN FOR SEWERS SHALL CONFORM TO ASTM A 53.

G. CONDENSATE DRAINS & INDIRECT WASTE (ABOVEGROUND).

1) DWV, WROUGHT COPPER, ANSI B-16.29 (CONDENSATE INSIDE BUILDING).
2) POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (CONDENSATE ON ROOF).
3) POLYVINYLCHLORIDE (PVC) DWV PIPE, SCHEDULE 40, SOLVENT JOINT (INDIRECT WASTE).

MECHANICAL SPECIFICATIONS (CONTINUED)

H. REFRIGERANT.

1) ASTM B 280, TYPE ACR, HARD-DRAWN STRAIGHT LENGTHS, AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING.
2) WROUGHT COPPER, ANSI B16.22, STREAMLINED PATTERN, FITTINGS. BRAZED JOINTS, AWS A 5.8, CLASSIFICATION BAG-1 (SILVER).
3) TUBING SHALL BE FACTORY CLEANED, READY FOR INSTALLATION, AND HAVE ENDS CAPPED TO PROTECT CLEANLINESS OF PIPE INTERIORS PRIOR TO SHIPPING.
4) SIZE AND INSTALLATION OF PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

I. NATURAL GAS.

1) BLACK STEEL PIPE, SCHEDULE 40, ASTM A53.
 a) PIPE 3" AND SMALLER; 150 LB. MALLEABLE IRON, THREADED FITTINGS.
 b) PIPE 4" AND SMALLER; VIEGA MEGAPRESS G FOR WATER AND GAS. CSA LC4, TSSA/ASME B31 FOR USE WITH ASTM A53 SCHEDULE 40 BLACK IRON PIPE.
 c) PIPE 2-1/2" AND LARGER, WELDED.
 d) PLUG VALVE: ROCKWELL NORDSTROM FIGURE NO. 142 OR 143.
 e) BALL VALVE: JOMAR T-100NE. APPROVALS- UL842, FM, CSA, NSF 61-8, MSS SP-110

2) GAS PIPING LABELING:
 a) ALL ELEVATED PRESSURE GAS PIPING SHALL BE LABELED EVERY 40 FEET WITH SIGNS INDICATING "ELEVATED PRESSURE".

3) GAS PIPING PAINTING:
 a) ALL BLACK STEEL GAS PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE PRIMED AND PAINTED TO EITHER MATCH ADJACENT EXTERIOR WHERE LOCATED ON OR NEAR EXTERIOR WALL AND PAINTED SAFETY YELLOW WHERE LOCATED ON THE ROOF.

J. ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELCEN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69.

K. SLEEVES

1) PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION.

2) INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.

3) ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.

4) PROTECTION AGAINST CONTACT: METALLIC PIPING, EXCEPT FOR CAST IRON, DUCTILE IRON AND GALVANIZED STEEL SHALL NOT BE PLACED IN DIRECT CONTACT WITH STEEL FRAMING MEMBERS, CONCRETE, OR CINDER WALLS AND FLOORS OR OTHER MASONRY. METALLIC PIPING SHALL NOT BE PLACED IN DIRECT CONTACT WITH CORROSIVE SOIL. SHEATHING USED TO PREVENT DIRECT CONTACT SHALL HAVE A THICKNESS OF GREATER THAN .008: AND THE SHEATHING SHALL BE MADE OF PLASTIC. ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL OR FOOTING SHALL BE PROVIDED WITH A RELIEVING ARCH, OR A PIPE SLEEVE SHALL BE BUILT INTO THE FOUNDATION WALL. THE SLEEVE SHALL BE TWO SIZES GREATER THAN THE PIPE PASSING THOUGH THE WALL OR FOOTING.

5) PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.

L. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS.

8. WATER HEATERS

A. COMMERCIAL, LIGHT-DUTY, STORAGE, ELECTRIC, DOMESTIC-WATER HEATERS:
 1. STANDARD: UL 174
 2. STORAGE-TANK CONSTRUCTION: STEEL, VERTICAL ARRANGEMENT.
  a. PRESSURE RATING: 150 PSIG.
  b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING LINING MATERIAL INTO TAPPINGS.
 3. FACTORY-INSTALLED, STORAGE-TANK APPURTENANCES:
  a. ANODE ROD: REPLACEABLE MAGNESIUM.
  b. DIP TUBE: REQUIRED UNLESS COLD-WATER INLET IS NEAR BOTTOM OF TANK.
  c. DRAIN VALVE: CORROSION-RESISTANT METAL WITH HOSE-END CONNECTION.
  d. INSULATION: COMPLY WITH ASHRAE/IES 90.1
  e. JACKET: STEEL WITH ENAMELED FINISH OR HIGH-IMPACT COMPOSITE MATERIAL.
  f. HEAT-TRAP FITTINGS: INLET TYPE IN COLD-WATER INLET AND OUTLET TYPE IN HOT-WATER OUTLET.
  g. HEATING ELEMENTS: ELECTRIC, SCREW-IN IMMERSION TYPE.
  h. TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT.
  i. SAFETY CONTROL: HIGH-TEMPERATURE-LIMIT CUTOFF DEVICE OR SYSTEM.
  j. RELIEF VALVE: ASME RATED AND STAMPED FOR COMBINATION TEMPERATURE-AND-PRESSURE RELIEF VALVES. INCLUDE RELIEVING CAPACITY AT LEAST AS GREAT AS HEAT INPUT, AND INCLUDE PRESSURE SETTING LESS THAN WORKING-PRESSURE RATING OF DOMESTIC-WATER HEATER. SELECT RELIEF VALVE WITH SENSING ELEMENT THAT EXTENDS INTO STORAGE TANK.

B. DOMESTIC-WATER EXPANSION TANKS:
 1. DESCRIPTION: STEEL, PRESSURE-RATED TANK CONSTRUCTED WITH WELDED JOINTS AND FACTORY-INSTALLED, BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.
 2. CONSTRUCTION:
  a. TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING. INCLUDE ASME B1.20.1 PIPE THREAD.
  b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.
  c. AIR-CHARGING VALVE: FACTORY INSTALLED.
 3. CAPACITY AND CHARACTERISTICS:
  a. WORKING-PRESSURE RATING: 150 PSIG .

9. INSULATION AND DUCT LINING:

A. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.

B. PIPE INSULATION - ABOVE GRADE:

1) THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu PER in/hr*sqft*F° OR LESS.

2) FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASJ JACKET, FACTORY APPLIED PRESSURE SEALING LONGITUDE LAP JOINT, NO STAPLES, ZESTON PREMOLDED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3) FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000.

4) FOR NON CIRCULATING SYSTEMS, THE FIRST 8 FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.

5) FOR CIRCULATING SYSTEMS, ALL HOT WATER PIPING IN THE CIRCULATION LOOP MUST BE INSULATED AS SPECIFIED BELOW.

6) INSULATION SCHEDULE:

a) DOMESTIC COLD WATER	1/2"
b) DOMESTIC HOT WATER	1"
d) CONDENSATE DRAINS INSIDE BUILDING	1/2"
e) REFRIGERANT SUCTION	3/4"
f) HORIZONTAL STORM PIPE (WHERE CONCEALED IN OFFICES)	1/2"

g) ROOF DRAINS- 1" INSULATION SHALL BE PROVIDED AT ROOF DRAIN BODY AND A MINIMUM OF 10' OF HORIZONTAL PIPING OR A MINIMUM OF 5' IF COMBINATION OF HORIZONTAL AND VERTICAL STORM PIPING DOWNSTREAM OF ROOF DRAIN BODY.

MECHANICAL SPECIFICATIONS (CONTINUED)

C. EQUIPMENT INSULATION:

1) FLEXIBLE FIBERGLASS: GLASS FIBER INSULATION, ASTM C 553, TYPE 1, CLASS B-4, SEMI-RIGID BOARD, WITH FACTORY LAMINATED KRAFT ALUMINUM FOIL (ALL SERVICE JACKET), VAPOR BARRIER, OWENS/CORNING PIPE AND TANK INSULATION.

D. DUCTWORK: ACOUSTICAL INSULATION.

1) DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS.

a) DUCT LINING SCHEDULE:

(1) RECTANGULAR SUPPLY DUCT	1/2" : THROUGHOUT THE FIRST 10 FEET OF DUCT.
(2) RETURN AIR DUCT	1/2" : THROUGHOUT THE FIRST 10 FEET OF DUCT.

E. DUCTWORK: THERMAL INSULATION.

1) DUCT COVERING: 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING, THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

a) DUCT COVERING SCHEDULE: MINIMUM R-6

(1) ROUND SUPPLY DUCT	2"
(2) RECTANGULAR SUPPLY DUCT	2"
(3) RETURN AIR DUCT	2"

2) EXPOSED SPIRAL DUCT.

a) MAIN ENTRY/LOBBY- DOUBLE WALL SPIRAL - DOUBLE WALL INSULATED SPIRAL DUCT AND FITTINGS WITH PERFORATED 1"LINER WITH A K VALUE OF 0.27.

10. DUCTWORK:

A. ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G 90 ZINC COATING IN ACCORDANCE WITH ASTM A 525; AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.

B. WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR PAINTING.

C. DUCTWORK, METAL GAUGES, REINFORCING, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC PRESSURE.

1) RECTANGULAR DUCT:

a) ELBOWS, UNLESS INDICATED OTHERWISE SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 DUCT WIDTH OR SQUARE ELBOW WITH DOUBLE WALL STREAMLINE VANES.

b) RETURN AIR ACOUSTICAL ELBOWS AND SOUND BOOTS SHALL BE A SQUARE ELBOW WITH NO TURNING VANES.

c) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.

2) ROUND AND OVAL SPIRAL SEAM DUCT:

a) PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISE, USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEGREE BRANCHES ARE INDICATED PROVIDE CONICAL TYPE TEES.

b) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3.

c) AS AN OPTION, PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS, IN LIEU OF SHOP-FABRICATED DUCT AND FITTINGS.

(1) ELBOWS: ONE PIECE CONSTRUCTION FOR 90 DEGREES AND 45 DEGREE ELBOW 14" AND SMALLER. PROVIDE MULTIPLE GORE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.

(2) DIVIDED FLOW FITTINGS: 90 DEGREE TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY.

d) ROUND LONGITUDINAL SEAM DUCT. USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS, UNLESS OTHERWISE INDICATED.

D. DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEETMETAL SIZES, ALLOWANCE FOR DUCT LINER HAS BEEN MADE WHERE APPLICABLE.

E. INSTALLATION OF METAL DUCTWORK:

1) GENERAL: ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIR-TIGHT SYSTEMS (MAXIMUM 5% LEAKAGE), WITH NO OBJECTIONABLE NOISE, AND CAPABLE OF PERFORMING INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE STRAPS, BRACES, HANGERS AND ANCHORS IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" LATEST EDITION. DUCT HANGERS SHALL BE OF THE TYPE WHICH WILL HOLD DUCTS TRUE-TO-SHAPE AND TO PREVENT BUCKLING. SUPPORT VERTICAL DUCTS AT EVERY FLOOR.

2) AUXILIARY STEEL: PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK.

3) ROUTING: LOCATE DUCTWORK RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. HOLD DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL DUCTWORK FROM VIEW, BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS. DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.

4) DO NOT ROUTE DUCTWORK THROUGH ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES, UNLESS INDICATED OTHERWISE.

5) PENETRATIONS:

a) WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL SPACE BETWEEN OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1-1/2". FASTEN TO DUCT AND WALL.

b) WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL.

6) COORDINATION: COORDINATE DUCT INSTALLATIONS WITH INSTALLATION OF ACCESSORIES, DAMPERS, COIL FRAMES, EQUIPMENT, CONTROLS, AND OTHER ASSOCIATED WORK OF THE DUCTWORK SYSTEM.

7) INSTALLATION: INSTALL METAL DUCTWORK IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION.

F. EQUIPMENT CONNECTIONS:

1) CONNECT METAL DUCTWORK TO EQUIPMENT AS INDICATED, PROVIDE FLEXIBLE CONNECTION FOR EACH DUCTWORK CONNECTION TO EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, AND/OR EQUIPMENT CONTAINING ROTATING MACHINERY. PROVIDE ACCESS DOORS AS REQUIRED.

G. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASE CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW.

1) UNCONDITIONED SPACES	CLASS B	CLASS A	CLASS C	CLASS B
2) CONDITIONED SPACES (PLENUM)	CLASS C	CLASS B	CLASS B	CLASS C
	SUPPLY ≤ 2" W.C.	SUPPLY > 2" W.C.	EXHAUST	RETURN

A. FLUES SHALL BE DOUBLE WALL TYPE B EQUAL TO METALBESTOS. PROVIDE MANUFACTURER'S STANDARD FITTINGS AND ACCESSORIES (ROOF THIMBLE, STORM COLLAR, COUNTERFLASHING, ETC.) AS REQUIRED FOR A COMPLETE INSTALLATION.

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2/19/2021
STATE OF MISSOURI
STEVEN S. POND
NUMBER
PE-2004000070
REGISTERED PROFESSIONAL ENGINEER

BC PROJECT #20782

HENRY MILLER MECHANICAL
Commercial Plumbing
Heating and Air Conditioning

A New Facility for
AUTOMOTIVE SALES & DETAIL CENTER
2150 NE Independence Ave
Lee's Summit, Missouri 64064

ISSUE DATE:
2/22/21

REVISION:

SHEET TITLE
MECHANICAL/PLUMBING
SPECIFICATIONS

MP0.0

MECHANICAL SPECIFICATIONS

11. FLEXIBLE DUCT:

A. ATCO #086 (R-6), OR EQUAL.

B. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.

C. MAXIMUM LENGTH OF 5'-0".

12. FLUES AND ACCESSORIES:

A. FLUE FOR GAS FIRED CONDENSING BOILER SHALL BE AS RECOMMENDED BY THE GAS APPLIANCE MANUFACTURER. FLUES SHALL BE SCHEDULE 40, PVC OR CPVC PIPE PER THE MANUFACTURERS INSTALLATION REQUIREMENTS.

B. PROVIDE MANUFACTURER'S STANDARD ACCESSORY ITEMS INCLUDING BIRD PROOF TOP, STORM COLLAR, ROOF THIMBLE, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. ROOF THIMBLES THROUGH THE BUILDING ROOF SHALL BE SUITABLE FOR USE WITH THE ROOF PROVIDED.

C. FLUES SHALL BE DOUBLE WALL TYPE B EQUAL TO METALBESTOS. PROVIDE MANUFACTURER'S STANDARD FITTINGS AND ACCESSORIES (ROOF THIMBLE, STORM COLLAR, COUNTERFLASHING, ETC.) AS REQUIRED FOR A COMPLETE INSTALLATION.

13. EXHAUST FANS:

A. CENTRIFUGAL TYPE FAN WITH CHARACTERISTICS AND CAPACITY AS SCHEDULED, ELECTRICALLY POWERED, SUITABLE FOR MOUNTING ON ROOF CURB, DIRECT OR BELT DRIVEN, HEAVY GAUGE SPUN-ALUMINUM WEATHERPROOF HOUSINGS OF THE HOODED DOME OR UPBLAST TYPE. PROVIDE PERMANENT SPLIT-CAPACITOR TYPE MOTOR FOR DIRECT DRIVEN FANS, AND CAPACITOR-START, INDUCTION-RUN TYPE MOTOR FOR BELT DRIVEN FANS.

B. CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREW ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR, PERMANENTLY LUBRICATED, WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH OR OTHER MEANS OF DISCONNECT AT MOTOR IN FAN HOUSING.

14. ROOFTOP UNITS:

A. UNIT SHALL BE FACTORY-ASSEMBLED AND TESTED, DESIGNED FOR ROOF INSTALLATION, AND SHALL CONSIST OF SCROLL TYPE COMPRESSOR(S), CONDENSERS, EVAPORATOR COILS, THERMAL EXPANSION VALVE, CONDENSATE DRAIN PAN, CONDENSER AND EVAPORATOR FANS, CONDENSER FANS TO BE SEQUENCED, REFRIGERATION CONTROLS, GAS FIRED HEAT EXCHANGER OR ELECTRIC HEATING SECTION, FILTERS, AND DAMPERS. CAPACITIES AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED ON THE DRAWINGS.

B. COMPRESSOR(S): UNIT SHALL INCLUDE VIBRATION ISOLATORS AND CRANKCASE HEATER. REFRIGERANT CIRCUIT SHALL INCLUDE A FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVES, AND LIQUID LINE SERVICE VALVES.

C. SAFETY CONTROLS SHALL INCLUDE:

a) LOW PRESSURE CUTOUT, MANUAL RESET.
b) HIGH PRESSURE CUTOUT, MANUAL RESET.
c) COMPRESSOR MOTOR OVERLOAD PROTECTION, MANUAL RESET.
d) ANTI-RECYCLING TIMING DEVICE.
e) ADJUSTABLE LOW-AMBIENT LOCKOUT.
f) OIL PRESSURE SWITCH.

D. REFRIGERANT COIL: ALUMINUM FINS BONDED TO SEAMLESS COPPER TUBE BY MEANS OF MECHANICAL EXPANSION. AN EQUALIZING TYPE VERTICAL DISTRIBUTOR SHALL ENSURE EACH COIL CIRCUIT RECEIVES THE SAME AMOUNT OF REFRIGERANT.

E. ECONOMIZER SHALL CONSIST OF RETURN AIR DAMPER, OUTDOOR AIR DAMPER, AND BAROMETRIC RELIEF DAMPER. PROVIDE POWERED EXHAUST FAN WITH MANUFACTURER'S STANDARD CONTROLS FOR UNITS SCHEDULED ON THE DRAWINGS.

F. GAS HEAT: INDIRECT FIRED, GAS HEAT EXCHANGER, AUTOMATIC SPARK IGNITION, MANUFACTURER'S STANDARD GAS TRAIN WITH REGULATOR (IF REQUIRED), AGA APPROVED. VERIFY GAS SERVICE PRESSURE TO INDIVIDUAL ROOFTOP UNITS.

G. ROOFTOP UNITS SHALL BE WIRED TO SHUTDOWN ON A SIGNAL FROM THE SMOKE DETECTORS AND SHALL AUTOMATICALLY RESET WHEN THE SMOKE DETECTORS ARE RESET.

15. SINGLE-ZONE MINI SPLIT SYSTEM WITH HEAT PUMP CONDENSING UNIT:

A. AIR HANDLING UNIT SHALL BE FACTORY ASSEMBLED, PRE-WIRED UNIT CONSISTING OF WIRING, PIPING, ELECTRONIC EXPANSION VALVE, AND CONTROLS. CAPACITY SHALL BE AS SCHEDULED.

1) THE UNIT SHALL BE EQUIPPED WITH THE MANUFACTURER'S STANDARD CONTROLS INCLUDING 24 VOLT CONTROL TRANSFORMER AND A WIRELESS OR WIRED REMOTE CONTROLLER.

2) UNIT SHALL BE EQUIPPED WITH A FILTER THAT IS EASILY REMOVABLE AND WASHABLE.

3) FAN SHALL BE A DC MOTOR, CAPABLE OF OPERATING AT 3 FAN GRADES: LOW, MEDIUM AND HIGH. MOTOR SHALL BE PROVIDED WITH THERMAL OVERLOAD PROTECTION.

4) CONNECTIONS: UNIT SHALL BE EQUIPPED WITH LIQUID AND GAS FLARE FITTINGS. SHALL HAVE CONNECTIONS FOR BOTH REFRIGERANT PIPING AND DRAINAGE ON BOTH SIDES OF UNIT. UNIT SHALL OFFER MULTIPLE ACCESS POINTS FOR REFRIGERANT OUTLET PIPES.

B. HEAT PUMP CONDENSING UNIT SHALL BE FACTORY-ASSEMBLED, PRE-WIRED AND TESTED AIR-COOLED CONDENSING UNIT, CONSISTING OF COMPRESSOR, CONDENSER COIL, FAN, MOTOR, REVERSING VALVE, SOLID-STATE DEFROST CONTROL UTILIZING THERMISTERS, REFRIGERANT RESERVOIR, OPERATING CONTROLS, ETC. CAPACITY AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED.

1) HERMETICALLY SEALED COMPRESSOR WITH BUILT-IN OVERLOADS AND VIBRATION ISOLATION. COMPRESSOR MOTOR, SHALL HAVE THERMAL AND CURRENT SENSITIVE OVERLOAD DEVICES, INTERNAL HIGH-PRESSURE PROTECTION, HIGH AND LOW PRESSURE CUTOUT SWITCHES, START CAPACITOR AND RELAY, 2-POLE CONTACTOR, CRANKCASE HEATER, AND TEMPERATURE ACTUATED SWITCH AND TIMER TO PREVENT COMPRESSOR RAPID CYCLE.

2) COIL SHALL BE COPPER TUBING WITH ALUMINUM FINS; A GRILLE GUARD SHALL BE INCLUDED COIL SHALL BE FACTORY COATED FOR INCREASED CORROSION RESISTANCE.

3) ALUMINUM PROPELLER FAN SHALL BE DIRECT DRIVEN, WITH PERMANENTLY LUBRICATED FAN MOTOR HAVING THERMAL OVERLOAD PROTECTION.

4) UNIT SHALL HAVE AN OPERATING COOLING RANGE OF AT LEAST 5°F TO 122°F AND AN OPERATING HEATING RANGE OF AT LEAST -15°F TO 86°F.

16. SMOKE DETECTORS:

A. DUCT DETECTOR REMOTE TEST STATION SHALL BE SIMPLEX 4098-9842 WITH REMOTE ALARM INDICATOR, POWER-ON INDICATOR, TONE-ALERT, TONE-ALERT SILENCE SWITCH, AND TEST/RESET SWITCH.

1) DEVICES SHALL BE MOUNTED IN APPROVED LOCATION AS INDICATED ON THE FLOOR PLANS OR AS DIRECTED BY LOCAL AUTHORITY HAVING JURISDICTION.

B. SMOKE DETECTORS SHALL BE INTERLOCKED. IN ALARM CONDITION OF A SINGLE DETECTOR ALL UNITS SHALL SHUT DOWN.

17. CONTROL WIRING:

A. ELECTRICAL WIRING AND WIRING CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM, SHALL BE PROVIDED BY THIS CONTRACTOR, UNLESS SPECIFICALLY SHOWN ON THE ELECTRICAL DRAWINGS OR SPECIFICATIONS.

B. INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINAL POINTS, COLOR CODED. INSTALL IN NEAT WORKMANLIKE MANNER, SECURELY FASTENED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THE ELECTRICAL SPECIFICATIONS.

1) INSTALL CIRCUITS OVER 25 VOLT WITH COLOR CODED NUMBER 12 WIRE.

2) INSTALL CIRCUITS UNDER 25 VOLT WITH COLOR CODED NUMBER 18 WIRE WITH 0.031 INCH HIGH TEMPERATURE 105 DEGREES F PLASTIC INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER ALL.

3) INSTALL ELECTRONIC CIRCUITS WITH COLOR CODED NUMBER 22 WIRE WITH 0.023 INCH POLYETHYLENE INSULATION ON EACH CONDUCTOR WITH PLASTIC JACKETED COPPER SHIELD OVER ALL.

4) INSTALL LOW VOLTAGE CIRCUITS, LOCATED IN CONCRETE SLABS AND MASONRY WALLS, OR EXPOSED IN OCCUPIED AREAS, IN ELECTRIC CONDUIT.

5) ALL WIRING IN AREAS USED AS AIR PLENUMS SHALL BE IN ELECTRIC CONDUIT EXCEPT THAT LOW VOLTAGE WIRING MAY BE TEFLON COATED, ALUMINUM SHEATHED CABLE OR OTHER WIRE SPECIFICALLY APPROVED FOR INSTALLATION IN AIR PLENUMS, WHERE ACCEPTABLE BY LOCAL CODES.

6) ALL WIRING IN AREAS NOT USED FOR AIR MOVEMENT SHALL BE IN ELECTRIC METALLIC TUBING EXCEPT LOW VOLTAGE WIRING MAY BE IN APPROVED SIGNAL CABLE WHERE ACCEPTED BY LOCAL CODES.

C. THERMOSTATIC CONTROLS TO HAVE A 5°F DEADBAND AND SETPOINT OVERLAP RESTRICTIONS.

1) TEMPERATURE CONTROLS SETBACK TO BE 55°F (HEAT) AND 85° (COOL), 2-HOUR OCCUPANT OVERRIDE, 10-HOUR BACKUP.

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2/19/2021

REGISTERED STATE OF MISSOURI STEVEN S. POND NUMBER 2004009241 LICENSED PROFESSIONAL ENGINEER

BC PROJECT #20782

Commercial Plumbing
Heating and Air Conditioning
HENRY MILLER MECHANICAL

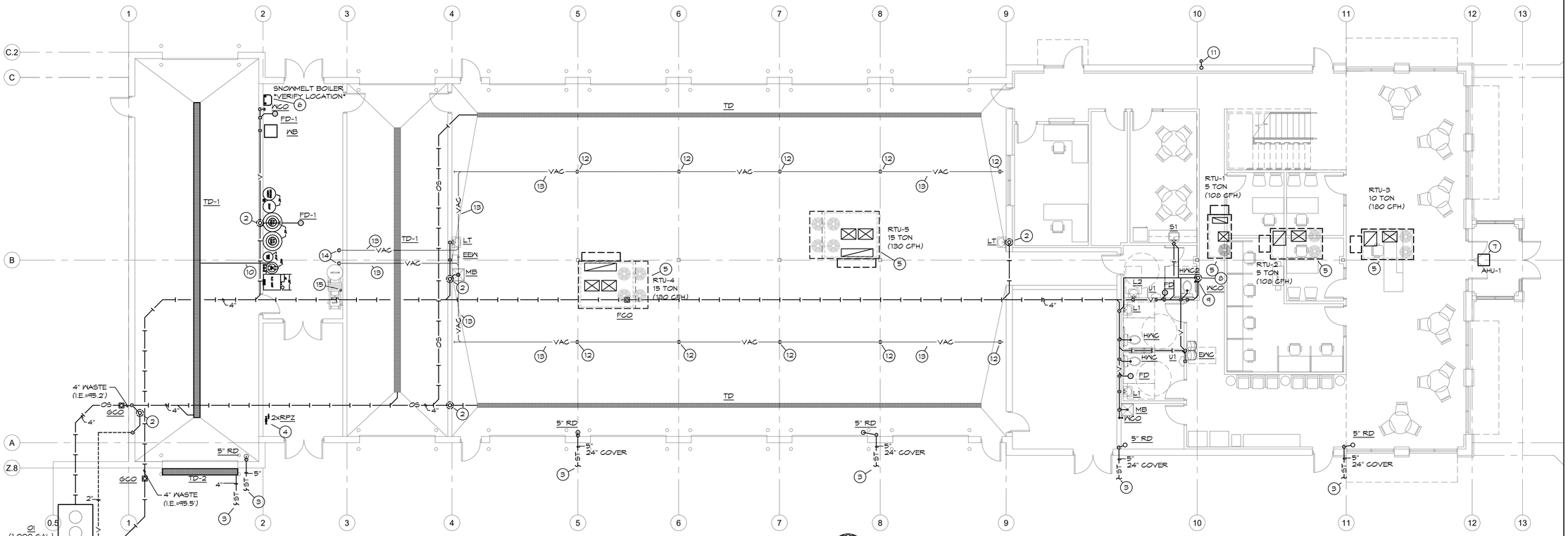
A New Facility for
AUTOMOTIVE SALES & DETAIL CENTER
2150 NE Independence Ave
Lee's Summit, Missouri 64064

ISSUE DATE:
2/22/21

REVISION:

SHEET TITLE
MECHANICAL/PLUMBING SPECIFICATIONS

MP0.1



NORTH

FIRST FLOOR WASTE & VENT PLAN

SCALE: 1/8" = 1'-0" FFE=100.0'

PLUMBING SYMBOLS

- SOIL AND WASTE PIPING BELOW FLOOR/GRADE
- SOIL AND WASTE PIPING ABOVE FLOOR/GRADE
- OS — OIL/SAND WASTE PIPING TO OIL/SAND INTERCEPTOR
- ST — STORM PIPING BELOW FLOOR/GRADE
- ST — STORM PIPING ABOVE FLOOR/GRADE
- V — SANITARY VENT PIPING ABOVE GRADE
- V — SANITARY VENT PIPING BELOW GRADE
- DOMESTIC COLD WATER PIPING
- DOMESTIC HOT WATER PIPING
- G — GAS PIPING
- VAC — VACUUM PIPING
- D — EQUIPMENT DRAIN LINE
- F — FIRE LINE
- PIPING TURNING DOWN
- PIPING TURNING UP
- TEE TOP CONNECTION
- UNION
- BACKFLOW PREVENTER
- FD — FLOOR DRAIN
- FCO — FLOOR CLEAN OUT
- WCO — WALL CLEAN OUT
- GCO — GRADE CLEAN OUT
- VALVE
- BALANCING VALVE
- SOLENOID VALVE
- PRESSURE REGULATOR
- CHECK VALVE
- CONNECT TO EXISTING
- I.E. — INVERT ELEVATION OF PIPE
- MATCH MARKS ON PLUMBING RISER DIAGRAM
- HS — HYDRONIC SUPPLY PIPING
- HR — HYDRONIC RETURN PIPING

PLUMBING GENERAL NOTES:

1. INSTALL ALL PIPE, ETC. AS HIGH AS POSSIBLE.
2. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES.
4. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC. FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.
5. PROVIDE 1" SCHEDULE 40 PVC CONDENSATE DRAIN PIPE FOR EACH ROOFTOP AS DETAILED.
6. NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
7. CONTRACTOR TO TEST WATER PRESSURE ON SITE AND PROVIDE PRESSURE REDUCING VALVE ON WATER SERVICE IF PRESSURE IS OVER 80 PSI.

PLUMBING PLAN NOTES:

1. SEE CIVIL FOR CONTINUATION OF 4" WASTE. MAINTAIN MINIMUM 30" COVER.
2. LOCATION OF 3" VTR. VERIFY 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES. SEAL PENETRATION WEATHERTIGHT.
3. STORM PIPING A MIN. OF 24" COVER. REFER TO CIVIL PLAN FOR CONTINUATION.
4. ROUTE DRAIN FROM RPZ BFPS THRU WALL TO DAYLIGHT AS REQUIRED.
5. CONNECT CONDENSATE TO RTU AS REQUIRED AND AS DETAILED.
6. ROUTE DRAIN FROM EQUIPMENT TO FLOOR DRAIN AND DISCHARGE WITH AIR GAP.
7. CONNECT ¾" CONDENSATE TO AIR HANDLER CONDENSATE PUMP AND ROUTE UP THRU ROOF AND DISCHARGE AS PER MANUFACTURER'S RECOMMENDATIONS.
8. ROUTE 2" VENT UP, SEE P1.1 FOR CONTINUATION.
9. 3" WASTE DOWN FROM MEZZANINE, PROVIDE CLEANOUT AT BASE OF RISER. SEE P1.1 FOR CONTINUATION.
10. COORDINATE WITH CAR WASH EQUIPMENT TO ROUTE 2" OVERFLOW DRAIN FROM REVERSE OSMOSIS TO TRENCH DRAIN.
11. ¾" DRAIN FROM AIR HANDLER ON MEZZANINE DOWN TO 18" ABOVE GRADE. ROUTE PIPING THRU WALL AND ELBOW DOWN 90°.
12. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER TO ROUTE 2" VACUUM DOWN TO VACUUM HOSE ASSEMBLY.
13. SUPPORT VACUUM PIPING FROM STRUCTURE AS REQUIRED.
14. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER TO CONNECT 6" VACUUM PIPING TO VACUUM SEPARATOR AND VACUUM PRODUCER AS EQUIRED.
15. CONNECT 4" EXHAUST TO VACUUM EQUIPMENT AND ROUTE UP THRU ROOF TO VENT TERMINATION AS REQUIRED. OFFSET AS REQUIRED TO MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.

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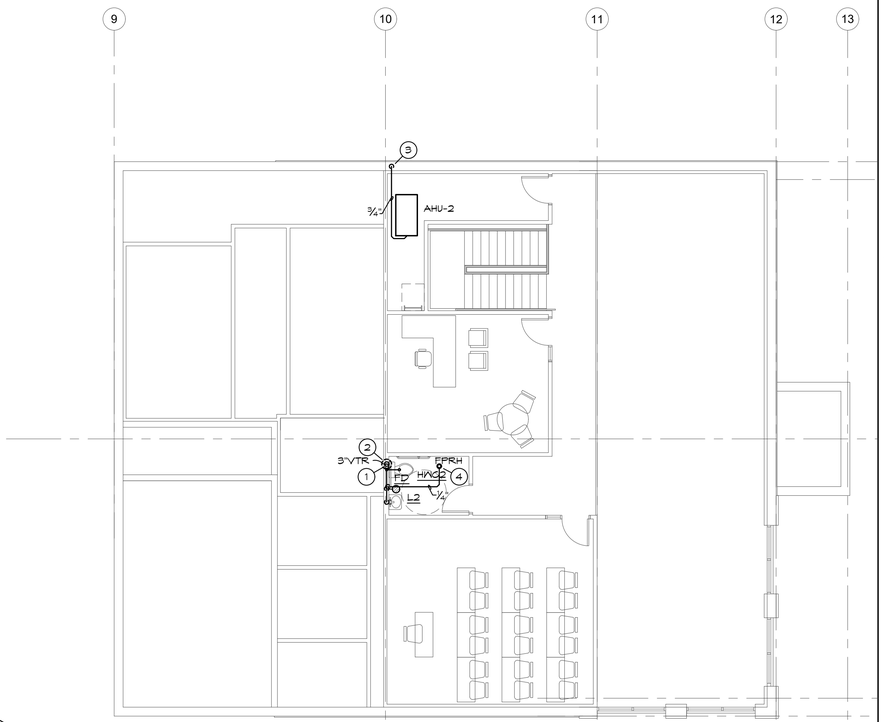
SHEET TITLE
FIRST FLOOR
WASTE & VENT PLAN

P1.0

PLUMBING PLAN NOTES:

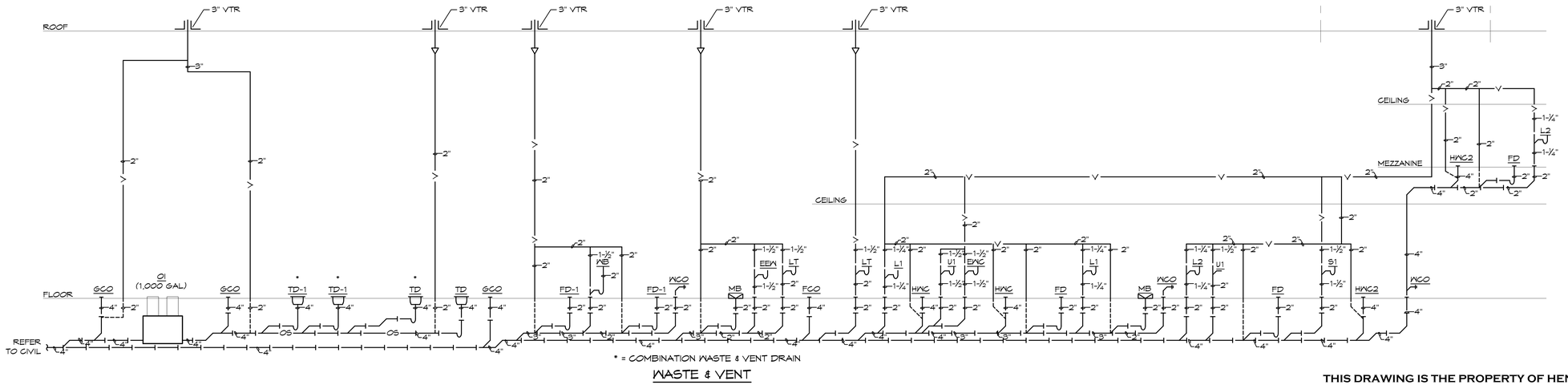
1. 3" WASTE DOWN. SEE P1.0 FOR CONTINUATION.
2. 2" VENT DOWN UP TO 3" VTR. VERIFY 10' CLEARANCE FROM ALL OUTDOOR AIR INTAKES. SEAL PENETRATION WEATHERTIGHT.
3. CONNECT ¾" DRAIN TO AIR HANDLING UNIT AND ROUTE DOWN IN WALL TO 18" ABOVE GRADE AND DISCHARGE ONTO GRADE, SEE P1.0 FOR CONTINUATION.
4. ROUTE ¼" DRAIN FROM FREEZE PROOF ROOF HYDRANT DOWN IN WALL AND DISCHARGE AT FLOOR DRAIN WITH AIR GAP AS PER MANUFACTURER'S RECOMMENDATIONS.



NORTH

MEZZANINE WASTE & VENT PLAN

SCALE: 1/8" = 1'-0"



* = COMBINATION WASTE & VENT DRAIN

WASTE & VENT

PLUMBING RISER DIAGRAMS

SCALE: NONE

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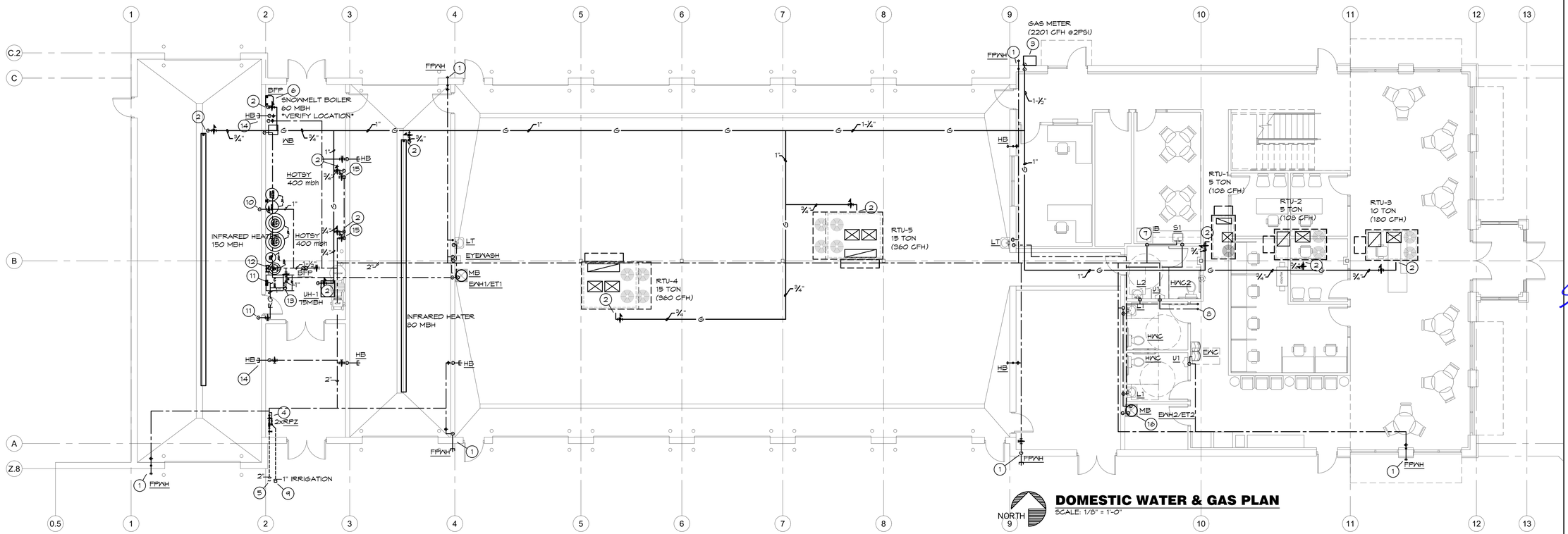
P1.1



DOMESTIC WATER & GAS PLAN

SCALE: 1/8" = 1'-0"

PLUMBING PLAN NOTES:

1. INSTALL WALL HYDRANT 18" ABOVE GRADE / FINISHED FLOOR.
2. CONNECT GAS TO EQUIPMENT WITH REGULATOR AS REQUIRED AND AS DETAILED. REGULATOR TO BE VENTED TO EXTERIOR.
3. COORDINATE WITH GAS COMPANY FOR INSTALLATION OF A METER WITH CAPACITY FOR 2201 CFH @ 2 psi. ROUTE PIPING UP INSIDE THE EXTERIOR WALL AND PENETRATE THE PARAPET WALL ONTO ROOF. ALL CONCEALED JOINTS ARE TO BE WELDED OR USE FITTINGS APPROVED FOR CONCEALED USE. VERIFY ALL EQUIPMENT GAS CAPACITIES AND OPERATING PRESSURES PRIOR TO INSTALLATION OF ANY PIPING. OBTAIN APPROVAL FROM GAS COMPANY FOR ELEVATED PRESSURE BEFORE INSTALLING ANY GAS PIPING.
4. PROVIDE 2" RPZ BACKFLOW PREVENTER AND INSTALL 24" A.F.F. & 6" FROM WALL. PROVIDE 1" RPZ FOR IRRIGATION LOCATED ABOVE 2" RPZ.
5. SEE CIVIL PLAN FOR CONTINUATION OF 2" DOMESTIC C.W. MAINTAIN MIN 48" COVER.
6. CONNECT C/W TO EQUIPMENT WITH BACKFLOW PREVENTER AS REQUIRED.
7. PROVIDE ICE MAKER BOX WITH VALVE FOR CONNECTION TO REFRIGERATOR BY OTHERS.
8. ROUTE 1-¼" C/W AND ½" H/W UP TO FIXTURES ON MEZZANINE.
9. CAP 1" IRRIGATION FOR FUTURE CONNECTION. MAINTAIN MINIMUM 48" COVER.
10. PROVIDE 1" C/W WITH SHUT OFF VALVE DOWNSTREAM OF BACKFLOW PREVENTOR FOR CONNECTION TO CAR WASH EQUIPMENT. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER FOR EXACT LOCATION AND REQUIREMENTS.
11. ROUTE 1" PVC PIPE FROM REVERSE OSMOSIS TO RINSE ARCH WITH SHUT OFF VALVE. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER FOR EXACT LOCATION AND REQUIREMENTS.
12. CONNECT 1" C/W TO REVERSE OSMOSIS DOWNSTREAM OF BACKFLOW PREVENTOR AS REQUIRED. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER FOR EXACT LOCATION AND REQUIREMENTS.
13. PROVIDE 1" BYPASS (NORMALLY CLOSED) FROM REVERSE OSMOSIS TO RINSE ARCH AS REQUIRED. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER FOR EXACT REQUIREMENTS.
14. COORDINATE WITH CAR WASH EQUIPMENT SUPPLIER FOR EXACT LOCATION OF HOSE BIB IN WASH BAY.
15. ROUTE 1" C/W DOWN WITH BACKFLOW PREVENTOR AND CONNECT ¾" C/W TO EACH 'HOTSY' AS REQUIRED. COORDINATE WITH CAR WASH EQUIPMENT TO ROUTE PIPING FROM EQUIPMENT TO OVERHEAD BOOM TO HAND WASH BAY.
16. SUPPORT EWH2 FROM WALL ABOVE MOP BASIN, COORDINATE WITH GC FOR WALL SUPPORT.

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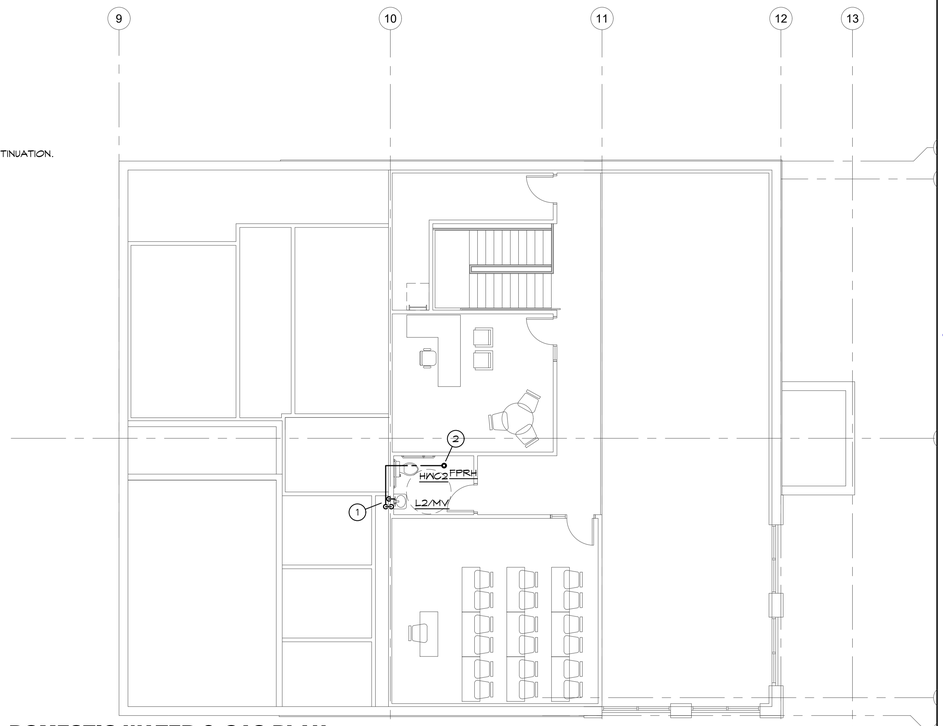
SHEET TITLE
FIRST FLOOR
WATER & GAS PLAN

P2.0

PLUMBING PLAN NOTES:

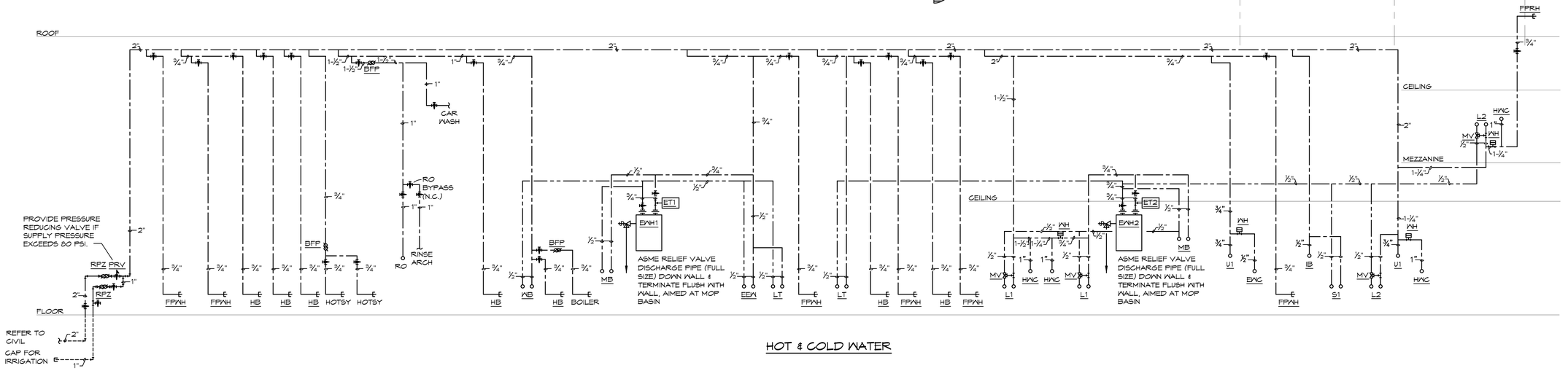
1. 1-¼" CW AND ½" HW UP FROM BELOW, SEE P1.0 FOR CONTINUATION.
2. ¾" CW UP TO FREEZE PROOF ROOF HYDRANT.



NORTH

DOMESTIC WATER & GAS PLAN

SCALE: 1/8" = 1'-0"



HOT & COLD WATER

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MEZZANINE
WATER & GAS PLAN

P2.1

PLUMBING FIXTURE SCHEDULE: (OR EQUAL)

HWC — WATER CLOSET (HANDICAPPED): AMERICAN STANDARD, #3043.001 "MADERA ADA", VITREOUS CHINA, FLOOR MOUNTED, FLOOR OUTLET, 17-1/2" HIGH ELONGATED BOWL, SIPHON-JET ACTION, #6147SM.161.002 BATTERY-OPERATED FLUSH VALVE, 1.6 GAL/FLUSH, CENTOCO #ST5CC-001 OPEN FRONT ELONGATED SEAT WITH CHECK HINGE. HANDLE ON WIDE SIDE OF FIXTURE.

HWC2 — WATER CLOSET (HANDICAPPED): AMERICAN STANDARD, #3043.001 "MADERA ADA", VITREOUS CHINA, FLOOR MOUNTED, FLOOR OUTLET, 17-1/2" HIGH ELONGATED BOWL, SIPHON-JET ACTION, #6147.161.002 MANUAL FLUSH VALVE, 1.6 GAL/FLUSH, CENTOCO #ST5CC-001 OPEN FRONT ELONGATED SEAT WITH CHECK HINGE. HANDLE ON WIDE SIDE OF FIXTURE.

U1 — URINAL, WALL HUNG: AMERICAN STANDARD, #6561.017 "TRIMBROOK", VITREOUS CHINA, 0.5 GPM WASH OUT ACTION, WALL HUNG URINAL WITH 3/4" TOP SPUD, ULTIMA SELECTRONIC #6063051 BATTERY-POWERED EXPOSED FLUSH VALVE, FLOOR MOUNTED FIXTURE SUPPORT. SET RIM HEIGHT PER ARCHITECTURAL DRAWINGS.

L1 — HANDICAP LAVATORY, WALL HUNG: AMERICAN STANDARD #03553012 "LUCERN", 20"x 18", VITREOUS CHINA, FRONT OVERFLOW, #6055.205.002 BATTERY-PONERED FAUCET, OFFSET GRID ELBOW DRAIN AND 1-1/4" TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT (MOUNTED PARALLEL WITH WALL), CHROME PLATED LOOSE KEY ANGLE STOPS AND RISERS, FLOOR MOUNTED CONCEALED ARM LAVATORY SUPPORT, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.

L2 — HANDICAP LAVATORY, WALL HUNG: AMERICAN STANDARD #03553012 "LUCERN", 20"x 18", VITREOUS CHINA, FRONT OVERFLOW, #2175.205.002 MANUAL FAUCET WITH SINGLE METAL LEVER FAUCET, OFFSET GRID ELBOW DRAIN AND 1-1/4" TAILPIECE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT (MOUNTED PARALLEL WITH WALL), CHROME PLATED LOOSE KEY ANGLE STOPS AND RISERS, FLOOR MOUNTED CONCEALED ARM LAVATORY SUPPORT, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL INSULATION.

S1 — SINK: ELKAY, #D12522, 21"x15-3/4"x 6-1/2" DEEP BOWL, 24-3/8"x21-3/8" CUT-OUT, SINGLE COMPARTMENT, SELF-RIMMING STAINLESS STEEL SINK WITH SATIN FINISH AND SOUND DAMPENING UNDERCOATING, AMERICAN STANDARD #4175.500.002 FAUCET, SWING SPOUT, AERATOR, SINGLE LEVER HANDLE, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED ANGLE STOPS AND RISERS.

WB — WASHER BOX: GUY GRAY "B-150, WASHER BOX WITH 1-1/2" DRAIN OUTLET AND TAILPIECE, AND 1/2" HOSE BIBBS.

MB — MOP BASIN: FIAT, "MSB-2424, MOLDED STONE MOP BASIN, 2" DRAIN, 24"x 24" BASIN, VINYL BUMPER GUARD, STERN WILLIAMS "T-10-VB FAUCET, SPRING CHECKS, VACUUM BREAKER, INTEGRAL STOPS, WALL BRACE & PAIL HOOK, WALL BRACKET WITH 30" HOSE.

EWC — ELECTRIC WATER COOLER: ELKAY, "EZSTL8W, BARRIER FREE TWO-STATION WATER COOLER WITH BOTTLE FILLING STATION, 8.0 GPH, 50 DEGREES F WATER WITH 90 DEGREES F AIR TEMPERATURE, 120 VOLT, COLOR TO BE SELECTED BY ARCHITECT AFTER AWARD OF CONTRACT, FRONT AND SIDE PUSH BARS, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED LOOSE KEY ANGLE STOP, FLOOR MOUNTED CARRIER AND CANE APRON.

FPWH — FREEZEPROOF WALL HYDRANT: WOODFORD #17, 3/4" HOSE NOZZLE OUTLET, BRASS FACE, HANDWHEEL OPERATED, INTEGRAL VACUUM BREAKER.

FPRH — FREEZEPROOF ROOF HYDRANT: JR SMITH #5906, 3/4" SIZE, NICKEL-BRONZE FACE, HANDLE OPERATED, INTEGRAL VACUUM BREAKER AND DRAIN DOWN.

HB — HOSE BIBB: WOODFORD, #24, 3/4" HOSE NOZZLE OUTLET, BRASS FINISH, HANDWHEEL OPERATED, INTEGRAL VACUUM BREAKER.

TD — TRENCH DRAIN: ZURN #Z-886-CG-GL, HEAVY DUTY .75% PRE-SLOPED FIBERGLASS TRENCH DRAIN, VERIFY LENGTH WITH CONTRACTOR, 6" WIDE, CLASS C HEAVY DUTY CAST IRON GRATE.

TD-1 — TRENCH DRAIN: ZURN #Z-882-CG-GL, HEAVY DUTY .75% PRE-SLOPED FIBERGLASS TRENCH DRAIN, VERIFY LENGTH WITH CONTRACTOR, 12" WIDE, CLASS C HEAVY DUTY CAST IRON GRATE.

TD-2 — TRENCH DRAIN: ZURN #Z-882-CG-GL, HEAVY DUTY .75% PRE-SLOPED FIBERGLASS TRENCH DRAIN, VERIFY LENGTH WITH CONTRACTOR, 12" WIDE, CLASS C HEAVY DUTY CAST IRON GRATE.

FD — FLOOR DRAIN: JR SMITH, #2005-A, CAST IRON FLOOR DRAIN WITH ADJUSTABLE TOP AND 6" NIKALOY STRAINER.

FD-1 — FLOOR DRAIN: JR SMITH, #2005-F37, CAST IRON FLOOR DRAIN WITH RECESSED CAST IRON STRAINER.

MV — MIXING VALVE: WATTS, "LFUSG-B, THERMOSTATIC CONTROLLED MIXING VALVE, LEAD FREE BRONZE BODY, LOCKED TEMPERATURE ADJUSTMENT CAP (VANDAL RESISTANT), COPPER ENCAPSULATED THERMOSTAT ASSEMBLY WITH BRASS SHUTTLE, STAINLESSSTEEL SPRINGS, INTEGRAL CHECK VALVES ON HOT AND COLD INLETS. (SET TO 110°F). ASSE 1070 LISTED.

OI — OIL INTERCEPTOR: ALLIED OR RELIABLE CONCRETE PRODUCTS, 1000 GALLON CONCRETE PRECAST OIL INTERCEPTOR WITH TRAFFIC-RATED LIDS AND ASSOCIATED PIPING PER CODE REQUIREMENTS AND AS DETAILED.

EWH1 — HOT WATER HEATER: AO SMITH #ECL-30, 30 GALLON STORAGE, 208 VOLT, 4500 WATT ELEMENT, ASME TEMPERATURE AND PRESSURE RELIEF VALVE.

ET1 — HOT WATER EXPANSION TANK: AMTROL, #ST-8, 3.2 GALLON EXPANSION TANK WITH DIAPHRAGM.

EWH2 — HOT WATER HEATER: AO SMITH #ECL-30, 30 GALLON STORAGE, 208 VOLT, 4500 WATT ELEMENT, ASME TEMPERATURE AND PRESSURE RELIEF VALVE.

ET2 — HOT WATER EXPANSION TANK: AMTROL, #ST-8, 3.2 GALLON EXPANSION TANK WITH DIAPHRAGM.

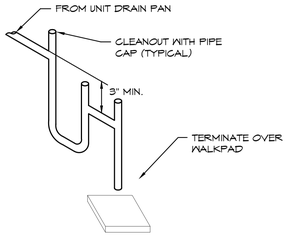
LT — LAUNDRY TUB: FIAT, #TAT1, HEAVY-DUTY POLYETHYLENE TUB WITH LEGS, 2" DRAIN, 20"X23-1/8"X14-3/8" DEEP BASIN, A1 CHROME PLATED FAUCET WITH WING HANDLES AND SPRING SPOUT, AERATOR AND HOSE ADAPTER, SPRING CHECK VALVES, VACUUM BREAKER, INTEGRAL STOPS.

RPZ — REDUCED ZONE PRESSURE BACKFLOW PREVENTOR: WATTS #LF009, LEAD FREE BRONZE BODY CONSTRUCTION, TWO, IN-LINE INDEPENDENT CHECK VALVES, REPLACEABLE CHECK SEATS WITH AN INTERMEDIATE RELIEF VALVE, AND BALL VALVE TEST COCKS.

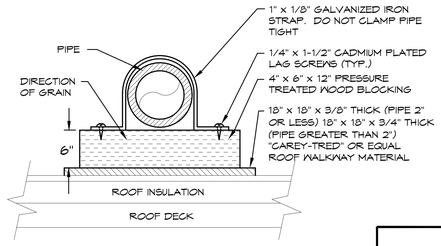
BFP — BACKFLOW PREVENTOR: WATTS #LF007, LEAD FREE DUAL CHECK VALVE WITH ATMOSPHERIC PORT & STRAINER.

RD — ROOF DRAIN: JR SMITH, #1010-CR, CAST IRON BODY, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, SUMP RECEIVER, AND POLYETHYLENE DOME.

WH — WATER HAMMER ARRESTOR: JR SMITH 'HYDROTROL' #5000 LEAD-FREE WATER HAMMER ARRESTOR, SIZED AS PER MANUFACTURER'S RECOMMENDATIONS.



CONDENSATE DRAIN DETAIL
SCALE: NONE



ROOF PIPE SUPPORT DETAIL
SCALE: NONE

PLUMBING DRAINAGE CALCULATIONS

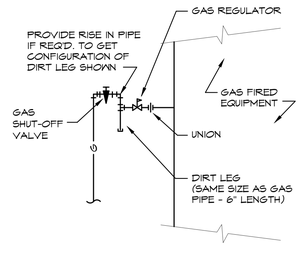
FIXTURE	QUANTITY	FU	TOTAL FU
WATER CLOSETS	4	4	20
URINAL	2	4	8
LAVATORIES	4	1	4
SINKS	3	2	6
FLOOR DRAIN	5	2	10
TRENCH DRAIN	4	2	8
MOP SINK	2	2	4
TOTAL			61 FU

VENT MAINS - 3"
WASTE MAIN - 4"

PLUMBING FIXTURE WATER COUNT

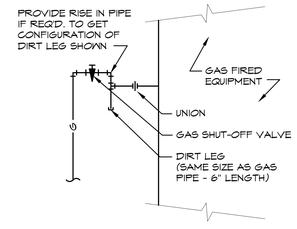
FIXTURE	QUANTITY	CW FU	CW TOTAL FU	HW FU	HW TOTAL FU	COMBINED FU	COMBINED TOTAL FU
WATER CLOSETS	4	10	40	0	0	10	40
URINAL	2	5	10	0	0	5	10
LAVATORIES	4	1.5	6.0	1.5	6.0	2	8
SINKS	3	2.25	6.75	2.25	6.75	3	9
MOP SINK	2	2.25	4.5	2.25	4.5	3	6
HOSE BIBB	12	2.5	27	0	0	2.5	27
WASHING MACHINE	1	1	1	1	1	1.4	1.4
			85.25 FU		18.25 FU		101.4 FU

COLD WATER MAIN - 2"
HOT WATER MAIN - 1"



GAS PRESSURE REGULATORS FOR ROOFTOP UNITS (RTU) AND GAS-FIRED EQUIPMENT SHALL BE SENSUS #143-80-2, 2 PSI INLET / 7" WC OUTLET PRESSURE WITH THE ORIFICE & SPRING SIZE AS RECOMMENDED BY THE MANUFACTURER.

GAS CONNECTION DETAIL
SCALE: NONE
FOR ROOFTOP UNITS, MAKE-UP AIR UNITS, ETC. WITH 2 PSI GAS PRESSURE

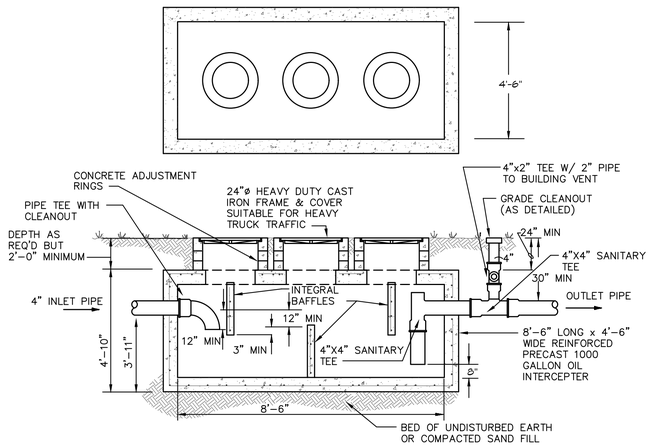


GAS CONNECTION DETAIL
SCALE: NONE

PLUMBING FIXTURE BRANCH PIPING SCHEDULE

FIXTURE	WASTE	VENT	CW	HW
WATER CLOSET (FLUSH VALVE)	4"	2"	1"	" "
URINAL	2"	1-1/2"	3/4"	" "
LAVATORY	1-1/4"	1-1/4"	1/2"	1/2"
SINK	1-1/2"	1-1/2"	1/2"	1/2"
FLOOR DRAIN	2"	2"	" "	" "
MOP BASIN	2"	2"	1/2"	1/2"
ELECTRIC WATER COOLER (BI-LEVEL)	1-1/2"	1-1/2"	1/2"	" "
WASHER BOX	1-1/2"	1-1/2"	1/2"	1/2
FLOOR SINK	3"	2"	" "	" "
TRENCH DRAIN	4"	" "	" "	" "

NOTE: INDIVIDUAL VENTS FOR FIXTURES ON PLANS AND RISER DIAGRAMS HAVE BEEN INCREASED WHERE HORIZONTAL VENT LENGTH IS IN EXCESS OF THE MAXIMUM DISTANCE INDICATED BY THE CODE.



1000 GALLON OIL SEPARATOR TRAP DETAIL
SCALE: NONE

BC ENGINEERS INCORPORATED
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(913)262-1772

PE COA #2009003629

2/19/2021

STATE OF MISSOURI — STEVEN S. POND — NUMBER PE-2009000070 — REGISTERED PROFESSIONAL ENGINEER

BC PROJECT #20782

Commercial Plumbing, Heating and Air Conditioning
HENRY MILLER MECHANICAL

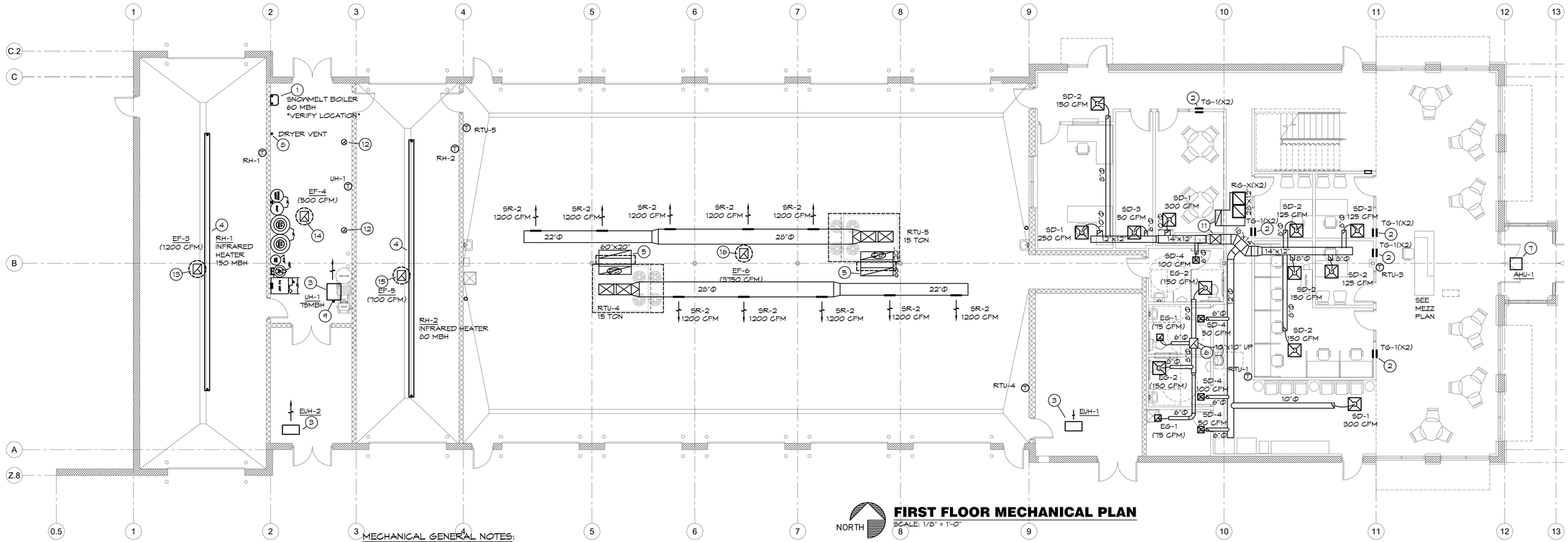
A New Facility for
AUTOMOTIVE SALES & DETAIL CENTER
2150 NE Independence Ave
Lee's Summit, Missouri 64064

ISSUE DATE: 2/22/21

REVISION:

SHEET TITLE: PLUMBING DETAILS

P3.0



FIRST FLOOR MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

MECHANICAL SYMBOLS

- NEW SUPPLY DIFFUSER
- NEW RETURN AIR GRILLE
- EXHAUST GRILLE/FAN
- (S) REMOTE TEMPERATURE SENSOR
- (T) THERMOSTAT, MOUNTED AT 48" AFF
- (SD) UNIT-MOUNTED SMOKE DETECTOR
- AQ AIR QUALITY SENSOR - CO/ NO2
- MOTORIZED DAMPER/LOUVER
- NEW DUCTWORK
- 32"x14" SIZE OF RECTANGULAR DUCT
- 6"Φ SIZE OF ROUND DUCT
- FLEXIBLE DUCTWORK
- FLEXIBLE CONNECTION TO FAN
- (3) FLOOR PLAN NOTE DESIGNATION
- S.A. SUPPLY AIR
- R.A. RETURN AIR
- EXH. EXHAUST AIR
- TRANSITION IN DUCT SIZE
- ELBOW WITH TURNING VANES
- MANUAL VOLUME DAMPER
- MANUAL VOLUME DAMPER
- MOTORIZED CONTROL DAMPER
- SPLITTER DAMPER WITH HORIZONTAL REGULATOR
- SUPPLY AIR DUCT UP/DOWN
- RETURN AIR DUCT UP/DOWN
- EXHAUST AIR DUCT UP/DOWN
- UP CHANGE IN ELEVATION UP (UP) DOWN (DN) IN DIRECTION OF FLOW
- RTU-1 SCHEDULED MECHANICAL EQUIPMENT

MECHANICAL GENERAL NOTES:

1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
2. THIS CONTRACTOR SHALL PERFORM ALL WORK INDICATED AND/OR AS REQUIRED FOR THE PROPER INSTALLATION AND OPERATION OF THE MECHANICAL SYSTEMS.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR EXACT LOCATIONS OF DIFFUSERS.
4. INSTALL ALL DUCT, PIPE, ETC. AS HIGH AS POSSIBLE.
5. DUCT SIZES SHOWN ARE ACTUAL SHEET METAL SIZES AND INCLUDE AN ALLOWANCE FOR DUCT LINER WHERE APPLICABLE.
6. PROVIDE FLEXIBLE CONNECTION BETWEEN DUCTWORK AND ROOFTOP UNITS, EXHAUST FANS, AND OTHER MOTORIZED EQUIPMENT.
7. NO DUCT SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.
8. ALL MATERIALS WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
9. ALL MECHANICAL SYSTEMS SHALL BE BALANCED BY A QUALIFIED BALANCING CONTRACTOR. REFER TO SPECIFICATIONS FOR DETAILS.
10. ALL EQUIPMENT LOCATED WITHIN 10'-0" FROM EDGE OF BUILDING TO HAVE MINIMUM 42" PARAPET OR MINIMUM 42" GUARD RAILING.

SEQUENCE OF OPERATION

EF

CARBON MONOXIDE DETECTION: UPON DETECTION OF CARBON MONOXIDE/ NITROUS OXIDE BY ANY OF OF THE SPACE SENSORS, THE GAS SENSING CONTROL PANEL SHALL CLOSE A RELAY TO ENERGIZE EXHAUST FAN. THE SYSTEM SHALL REMAIN ENERGIZED UNTIL SENSORS INDICATE REMOVAL OF CARBON MONOXIDE.

CONTROL SEQUENCE FOR EXHAUST FANS, AND DAMPERS

WHEN THE GAS SENSING CONTROL PANEL CALLS FOR EF-6 TO OPERATE AND VENTILATE THE SPACE. THE FAN SHALL RUN WHEN WHEN THE DAMPER IS OPEN.

MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL 14 AWG LOW VOLTAGE CONTROL WIRING BETWEEN GAS SENSOR PANEL, FAN STARTERS, AND DAMPERS. COORDINATE WITH ELECTRICAL CONTRACTOR FOR CONDUIT BETWEEN DEVICES.

25 PPM CO - ENGAGE EXHAUST FAN.
100 PPM CO - ENGAGE EXHAUST FAN AND LOCAL HORN/STROBE

0.72 PPM NO2 - ENGAGE EXHAUST FAN.
2 PPM NO2 - ENGAGE EXHAUST FAN AND LOCAL HORN/STROBE

MECHANICAL PLAN NOTES:

1. CONNECT 3"Φ COMBUSTION AIR AND 3"Φ FLUE UP TO SNOWMELT BOILER AND ROUTE PIPING UP THRU ROOF TO TERMINATION AS REQUIRED BY MANUFACTURER. OFFSET AS REQUIRED TO MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES, SEAL PENETRATION WEATHERTIGHT.
2. HIGH/LOW RETURN AIR GRILLES - OFFICE SIDE GRILLE LOCATED AT 12" AFF. CENTRAL AREA SIDE LOCATED AT 8' AFF. INSTALL TG-1 ON BOTH SIDES OF WALL.
3. SUPPORT UNIT HEATER FROM STRUCTURE AS REQUIRED.
4. SUPPORT RADIANT HEATER FROM STRUCTURE AS REQUIRED. ROUTE 4"Φ COMBUSTION AND 4"Φ FLUE UP THRU ROOF TO MANUFACTURER'S TERMINATION AS REQUIRED. SEAL PENETRATION WEATHERTIGHT.
5. RETURN AIR OPENING TURNED UP TO 14" BELOW STRUCTURE.
6. ROUTE 10"x10" EXHAUST DUCT UP THRU ROOF TO EXHAUST FAN. SEE M1.1 FOR CONTINUATION.
7. SUPPORT UNIT FROM STRUCTURE AS REQUIRED.
8. CONNECT 4"Φ DRYER VENT TO DRYER AS REQUIRED AND ROUTE UP THRU ROOF TO GOOSENECK AS REQUIRED. OFFSET AS REQUIRED TO MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
9. CONNECT 4"Φ TYPE 'B' FLUE TO UNIT HEATER AND ROUTE UP THRU ROOF TO WEATHERHEAD AS REQUIRED. OFFSET AS REQUIRED TO MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
10. SUPPORT FAN FROM STRUCTURE AS REQUIRED BY THE MANUFACTURER.
11. SEE M1.1 FOR CONTINUATION OF 28"x12" RETURN AIR, AND 18"x18" SUPPLY AIR FROM ROOFTOP UNIT.
12. CONNECT TYPE 'B' FLUE TO HOTSY EQUIPMENT AND ROUTE UP THRU ROOF TO VENT TERMINATION AS REQUIRED BY MANUFACTURER. MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
13. ROUTE 14"x14" EXHAUST DUCT FROM EXHAUST FAN DOWN THRU ROOF TO 14" BELOW STRUCTURE AS REQUIRED.
14. ROUTE 10"x10" EXHAUST DUCT FROM EXHAUST FAN DOWN THRU ROOF TO 14" BELOW STRUCTURE AS REQUIRED.
15. ROUTE 12"x10" EXHAUST DUCT FROM EXHAUST FAN DOWN THRU ROOF TO 14" BELOW STRUCTURE AS REQUIRED.
16. ROUTE 16"x16" EXHAUST DUCT FROM EXHAUST FAN DOWN THRU ROOF TO 14" BELOW STRUCTURE AS REQUIRED.

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2/19/2021

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STEVEN S. POND
NUMBER PE2009003629
REGISTERED PROFESSIONAL ENGINEER

BC PROJECT #20782

HENRY MILLER MECHANICAL
Commercial Plumbing
Heating and Air Conditioning

A New Facility for
AUTOMOTIVE SALES & DETAIL CENTER
2150 NE Independence Ave
Lee's Summit, Missouri 64064

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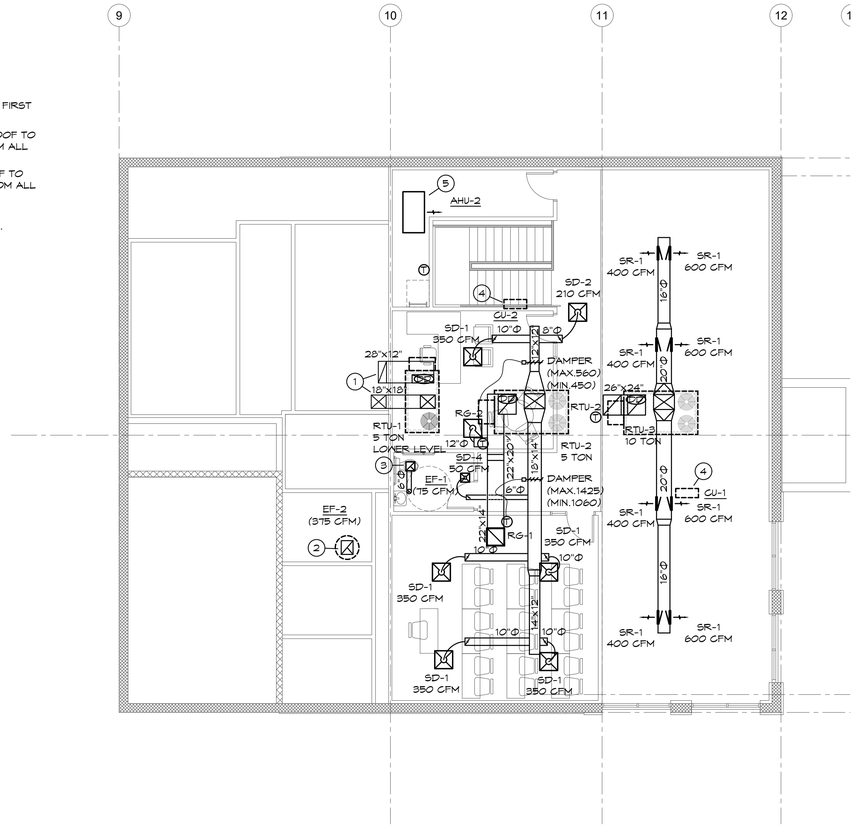
REVISION:

SHEET TITLE
FIRST FLOOR MECHANICAL PLAN

M1.0

MECHANICAL PLAN NOTES:

1. SEE M1.0 FOR CONTINUATION OF 28"x12" RETURN AIR, AND 18"x18" SUPPLY AIR DOWN TO FIRST FLOOR.
2. SEE M1.0 FOR CONTINUATION OF 10"x10" EXHAUST AIR. ROUTE EXHAUST DUCT UP THRU ROOF TO EXHAUST FAN AS REQUIRED, OFFSET AS REQUIRED TO MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
3. SUPPORT FAN FROM STRUCTURE AS REQUIRED. ROUTE 6"Ø EXHAUST DUCT UP THRU ROOF TO WEATHERHEAD AS REQUIRED, OFFSET AS REQUIRED TO MAINTAIN 10'-0" CLEARANCE FROM ALL OUTDOOR AIR INTAKES.
4. REFRIGERANT PIPING THROUGH ROOF TO AIR HANDLING UNIT AS REQUIRED. CONNECT REFRIGERANT PIPING TO CONDENSING UNIT & COIL AS REQUIRED BY THE MANUFACTURER. PROVIDE AND INSTALL REFRIGERANT PIPING FOR CONDENSING UNIT AS REQUIRED BY MANUFACTURER.
5. SUPPORT UNIT FROM STRUCTURE AS REQUIRED. PROVIDE VIBRATION ISOLATION AND ADDITIONAL STEEL BRACING AS REQUIRED.



NORTH

MEZZANINE MECHNICAL PLAN
SCALE: 1/8" = 1'-0"

BC ENGINEERS INCORPORATED
5720 Reeder
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MEZZANINE
MECHANICAL PLAN

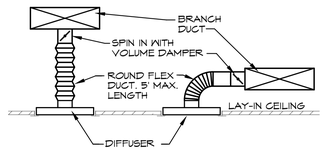
M1.1

DIFFUSER SCHEDULE

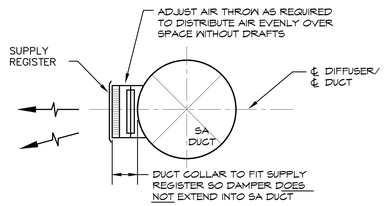
MARK	MFGR	MODEL	BORDER TYPE	NECK SIZE	FACE SIZE	FINISH	DAMPER	ACCESSORIES	NOTES
SD-1	TITUS	TMS	3	10"Φ	24"x24"	WHITE	-	-	-
SD-2	"	"	3	8"Φ	"	WHITE	-	-	-
SD-3	"	"	3	6"Φ	"	WHITE	-	-	-
SD-4	"	TMS	3	"	12"x12"	WHITE	-	TRM FRAME	-
SR-1	"	3300FL	-	18"x8"	-	ANODIZED	AIR SCOOP	-	-
SR-2	"	300RL	-	18"x14"	-	ANODIZED	OPPOSED BLADE	-	-
RG-1	"	PAR	3	22"x22"	24"x24"	WHITE	-	-	-
RG-2	"	PAR	3	12"Φ	24"x24"	WHITE	-	-	-
TG-1	"	350RL	-	14"x8"	-	WHITE	-	-	-
EG-1	"	PAR	3	6"Φ	12"x12"	WHITE	-	TRM FRAME	-
EG-2	"	"	3	"Φ	24"x24"	WHITE	-	-	-

OUTDOOR AIR CALCULATIONS

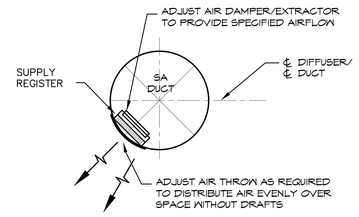
UNIT	Area (sqft)	OCCUPANCY CLASSIFICATION	Occupant Density #/1000 sqft	People outdoor airflow rate in breathing zone, (Rp) cfm/person	Area outdoor airflow rate in breathing zone, (Ra) cfm/sqft	Exhaust airflow rate cfm/sqft	Breathing zone outdoor airflow (Vbz)	Zone air distribution effectiveness (Ez)	Zone outdoor airflow (cfm)
EF-3		**Storage**							
	1100	Repair garages, enclosed parking garages	0	0	0	.75	0	0.8	(825)
								Total	(825)
EF-5		**Storage**							
	890	Repair garages, enclosed parking garages	0	0	0	.75	0	0.8	(668)
								Total	(668)
EF-6		**Storage**							
	5000	Repair garages, enclosed parking garages	0	0	0	.75	0	0.8	(3750)
								Total	(3750)
RTU-1		**Offices**							
	810	Office spaces	5	5	0.06		69	0.8	86
	185	Break Room	25	5	0.06		34	0.8	43
		Public spaces							
	750	Corridors	0	0	0.06		45	0.8	56
	240	Toilet rooms public	0	0	0	50/10	0	0.8	0
		Storage							
	170	Warehouses	0	0	0.06		10	0.8	13
								Total	198
RTU-2		**Offices**							
	725	Office spaces	5	5	0.06		62	0.8	77
		Public spaces							
	320	Corridors	0	0	0.06		19	0.8	24
	60	Toilet rooms public	0	0	0	50/10	0	0.8	0
								Total	101
RTU-3		**Offices**							
	110	Reception areas	30	5	0.06		23	0.8	29
	1050	Main entry lobbies	10	5	0.06		116	0.8	144
								Total	173



DIFFUSER DETAIL
SCALE: NONE



SUPPLY REGISTER DETAIL
SCALE: NONE



SUPPLY REGISTER DETAIL
SCALE: NONE

EXHAUST FAN SCHEDULE

MARK	MFGR	MODEL	CFM	EXTERNAL STATIC P. IN. WG.	RPM	ELECTRICAL VOLT/Φ/HZ	ELECTRICAL PWR	FAN TYPE	CONTROLS	NOTES
EF-1	COOK	GC-128	75	0.1	750	120/1/60	29 W	CEILING EXHAUST	SWITCH	1
EF-2	"	90C15DH	450	0.375	1550	"	1/8HP	ROOF EXHAUST	TIME CLOCK	2
EF-3	"	120C13D	1200	0.1	1300	"	1/4HP	ROOF EXHAUST	SENSOR	2,3
EF-4	"	90C15DM	500	0.1	1670	"	117W	ROOF EXHAUST	THERMOSTAT	2,4
EF-5	"	90C15DH	700	0.1	1550	"	134W	ROOF EXHAUST	SENSOR	2,3
EF-6	"	180C10D	3750	0.1	1075	"	3/4HP	ROOF EXHAUST	SENSOR	2,3

NOTES:
1. PROVIDE CEILING GRILLE, INTEGRAL BACK DRAFT DAMPER, VARI-SPEED CONTROLLER (NEAR FAN AND ABOVE CEILING), AND WEATHER HEAD.
2. PROVIDE INSULATED 14" HIGH (AT LOWEST POINT) PREFABRICATED ROOF CURB, BACKDRAFT DAMPER, BIRD SCREEN, UNIT MOUNTED VARIABLE SPEED CONTROLLER.
3. INTERLOCK WITH GAS DETECTION SYSTEM.
4. PROVIDE LINE VOLTAGE COOLING ONLY THERMOSTAT FOR CONTROL OF FAN. SET TO 80°F.

MINI SPLIT SYSTEM AC/HEAT PUMP CONDENSING UNIT SCHEDULE

MARK	MFGR	MODEL NO.	NOMINAL TONS	COOLING BTU/H	ELECTRICAL VOLT/Φ/HZ	ELECTRICAL BREAKER SIZE (AMPS)	SEER	NOTES
CU-1	MITSUBISHI	PUZ-A18NHA6	1.0	12,000	208/1/60	15	14.2	HEAT PUMP
CU-2	MITSUBISHI	PUY-A42NKA7	3.5	42,000	240/1/60	30	16.1	COOLING ONLY

1. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOCP'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.
2. PROVIDE HAIL GUARDS FOR EACH UNIT.

MINI SPLIT SYSTEM AC/HEAT PUMP INDOOR UNIT SCHEDULE

MARK	MFGR	INDOOR UNIT MODEL NO.	EVAP. CFM	NOMINAL TONS	ELECTRICAL MCA (A)	ELECTRICAL VOLT/Φ/HZ	AHU WEIGHT (LBS)	OUTDOOR UNIT	REMARKS
AHU-1	MITSUBISHI	PLA-A18BA6	390	1.0	1	208/1/60	49	CU-1	1
AHU-2	MITSUBISHI	PEAD-A42AA7	1483	4.0	3.5	240/1/60	91	CU-2	1,2

NOTES:
1. PROVIDE WIRED THERMOSTAT CONTROL, REFRIGERANT LINESETS, ELECTRICAL WHIPS. COORDINATE UNIT MOCP WITH ELECTRICAL CONTRACTOR.
2. PROVIDE WATERTIGHT DRAIN PAN AND CONDENSATE FLOAT SWITCH TO DE-ENERGIZE THE UNIT IF THE DRAIN PAN FILLS WITH WATER.

GAS FIRED INFRARED HEATER SCHEDULE

MARK	MFGR	MODEL	HEATING (GAS) BTUH INPUT	ELECTRICAL VOLT/Φ/HZ	LENGTH	REMARKS	NOTES
RH-1	ROBERTS GORDON	HEV	80,000	120/1/60	40'-0"	TUBULAR, LOW INTENSITY	1,2
RH-2	"	"	"	"	"	"	1,2

NOTES:
1. PROVIDE CONTROL TRANSFORMER, THERMOSTAT, 4"Ø COMBUSTION AIR INTAKE & WEATHERPROOF CAP, 4"Ø FLUE & WEATHERPROOF CAP, ETC., REQUIRED FOR A COMPLETE SYSTEM.
2. GAS FIRED INFRARED HEATER TO BE DESIGNED FOR HARSH ENVIRONMENTS.

ELECTRIC UNIT HEATER SCHEDULE

MARK	MFGR	MODEL NO.	BTUH	ELECTRICAL VOLT/Φ/HZ	ELECTRICAL WATTS	NOTES
EUH-1	RAYNALL	AFA730D	10,350	277/1/60	3 KW	1
EUH-2	"	AFA748D	17,060	"	4.8 KW	1

NOTES: 1. PROVIDE INTEGRAL DISCONNECT & INTEGRAL THERMOSTAT FOR EACH UNIT.

GAS FIRED UNIT HEATER SCHEDULE

MARK	MFGR	MODEL	CFM	HEATING (GAS) BTUH INPUT	HEATING (GAS) BTUH OUTPUT	ELECTRICAL VOLT/Φ/HZ	ELECTRICAL HP	NOTES
UH-1	LENNOX	LF25-075A1	1200	75,000	62,550	120/1Φ/60	1/15	1,2

NOTES:
1. PROVIDE EACH UNIT ELECTRONIC PILOT IGNITION & ALUMINIZED STEEL HEAT EXCHANGER.
2. PROVIDE EACH UNIT WITH REMOTE MOUNTED THERMOSTAT & CONTROL VOLTAGE TRANSFORMER.

ROOFTOP UNIT SCHEDULE

MARK	MFGR	MODEL NO.	NOM. TONS	EVAP. CFM	EXT. STATIC P. IN. WG. (NOTE 2)	COOLING TOTAL BTUH	COOLING SENS. BTUH	COOLING AMB.	COOLING EVAP. EAT DB/WB	HEATING (GAS) BTUH INPUT	HEATING (GAS) BTUH OUTPUT	ELECTRICAL VOLT/Φ/HZ	ELECTRICAL BLOWER MOTOR	ELECTRICAL MIN. MCA (AMPS)	ELECTRICAL MIN. MOCP (AMPS)	MINIMUM OUTDOOR AIR (CFM)	TOTAL WEIGHT (LBS)	SEER /EER	FREON	NOTES
RTU-1	LENNOX	KGB060S4B	5	1,990	1.0	59,700	44,700	105	80/67	108,000	86,000	480/3/60	2 HP	14	20	400	925	14.0 / -	R-410a	1,2,3,4,5,6
RTU-2	"	KGB060S4B	5	1,990	1.0	59,700	44,700	"	"	108,000	86,000	"	2 HP	14	20	150	925	14.0 / -	"	"
RTU-3	"	KGB120S4B	10	4,000	0.5	108,800	80,500	"	"	180,000	144,000	"	2 HP	24	30	200	1600	- / 11.0	"	"
RTU-4	"	KGB180S4B	15	6,000	0.5	169,100	126,800	"	"	360,000	288,000	"	3 HP	30	35	1200	1660	- / 10.8	"	"
RTU-5	"	KGB180S4B	15	6,000	0.5	169,100	126,800	"	"	360,000	288,000	"	3 HP	30	35	1200	1660	- / 10.8	"	"

NOTES:
1. PROVIDE OUTDOOR AIR ECONOMIZER WITH STANDARD PERFORMANCE ECONOMIZER CONTROLLER, FIXED DRY BULB CONTROL, BAROMETRIC RELIEF DAMPER, CONSTANT-STAGE AIR VOLUME, SCROLL COMPRESSORS WITH CRANKCASE HEATER, HIGH PRESSURE SWITCHES, FREEZESTAT, HAIL GUARDS. STANDARD COOLING DOWN TO 30°F. OUTDOOR AIR DAMPER TO FULLY CLOSE W/ FAN SHUTDOWN FOR ALL UNITS. MULTI STAGE HEATING.
2. EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC EQUIPMENT INCLUDING BUT NOT LIMITED TO FILTERS, COILS AND ECONOMIZERS. THE FAN AND MOTOR SHALL BE SIZED APPROPRIATELY TO MEET THIS DEFINITION OF EXTERNAL STATIC PRESSURE.
3. PROVIDE COMMERCIAL 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER TOUCHSCREEN THERMOSTAT WITH OPTIMUM START CONTROLS, AND ECONOMIZER OUTPUT FOR EACH UNIT. ECONOMIZER/OUTDOOR AIR DAMPER IS TO CLOSE DURING UNOCCUPIED HOURS.
4. PROVIDE 14" HIGH (AT LOWEST POINT) PRE-FABRICATED INSULATED ROOF CURB WITH SLOPE TO MATCH SLOPE OF ROOF FOR EACH UNIT.
5. PROVIDE FACTORY MOUNTED SMOKE DETECTOR IN RETURN OF UNIT.
6. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOCP'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.

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Shawnee, Ks. 66203
(913)262-1772

PE COA #2009003629

2/19/2021

BC PROJECT #20782

HENRY MILLER MECHANICAL
Commercial Plumbing
Heating and Air Conditioning

A New Facility for
AUTOMOTIVE SALES & DETAIL CENTER
2150 NE Independence Ave
Lee's Summit, Missouri 64064

ISSUE DATE:
2/22/21

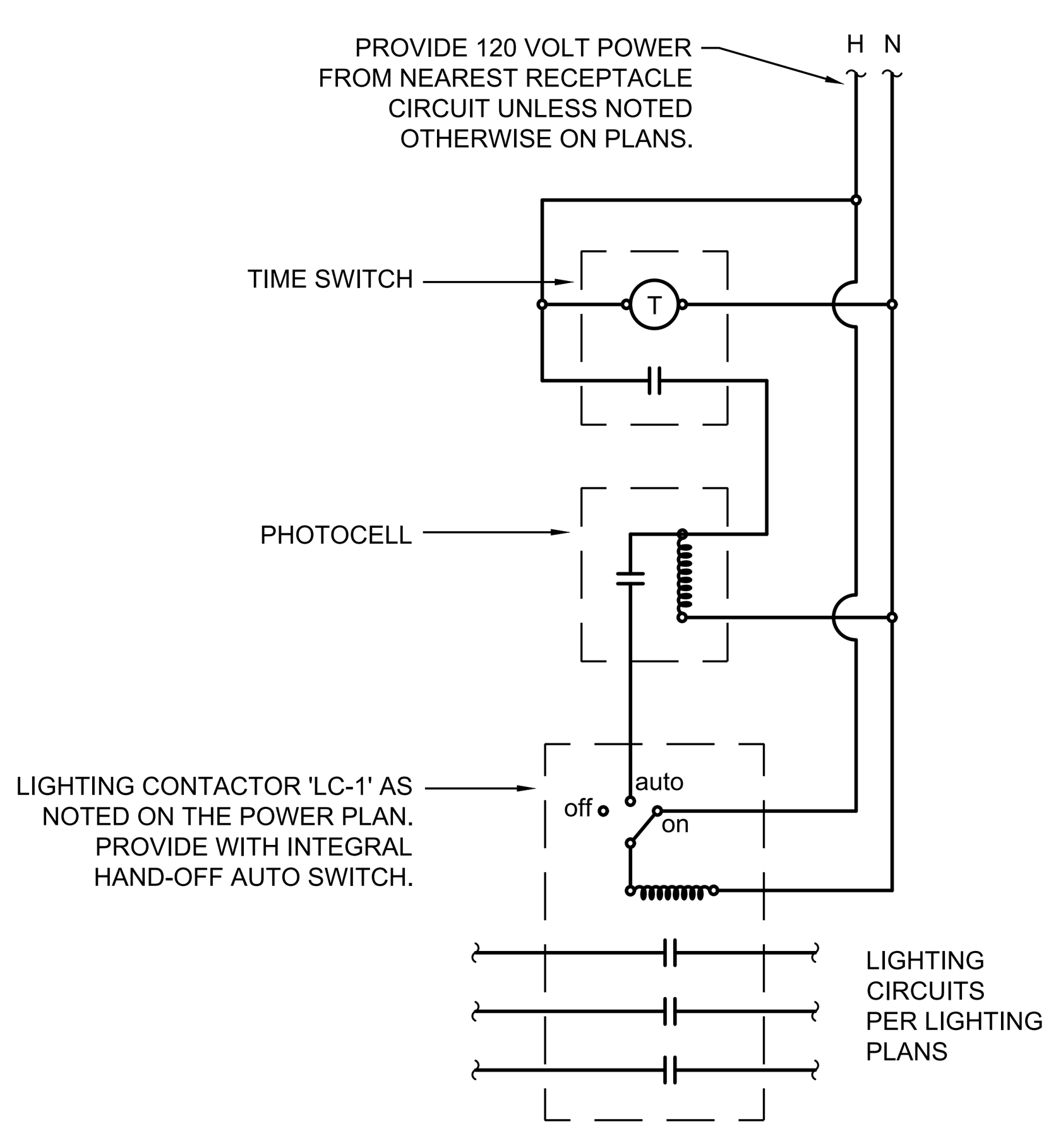
REVISION:

SHEET TITLE
MECHANICAL SCHEDULES

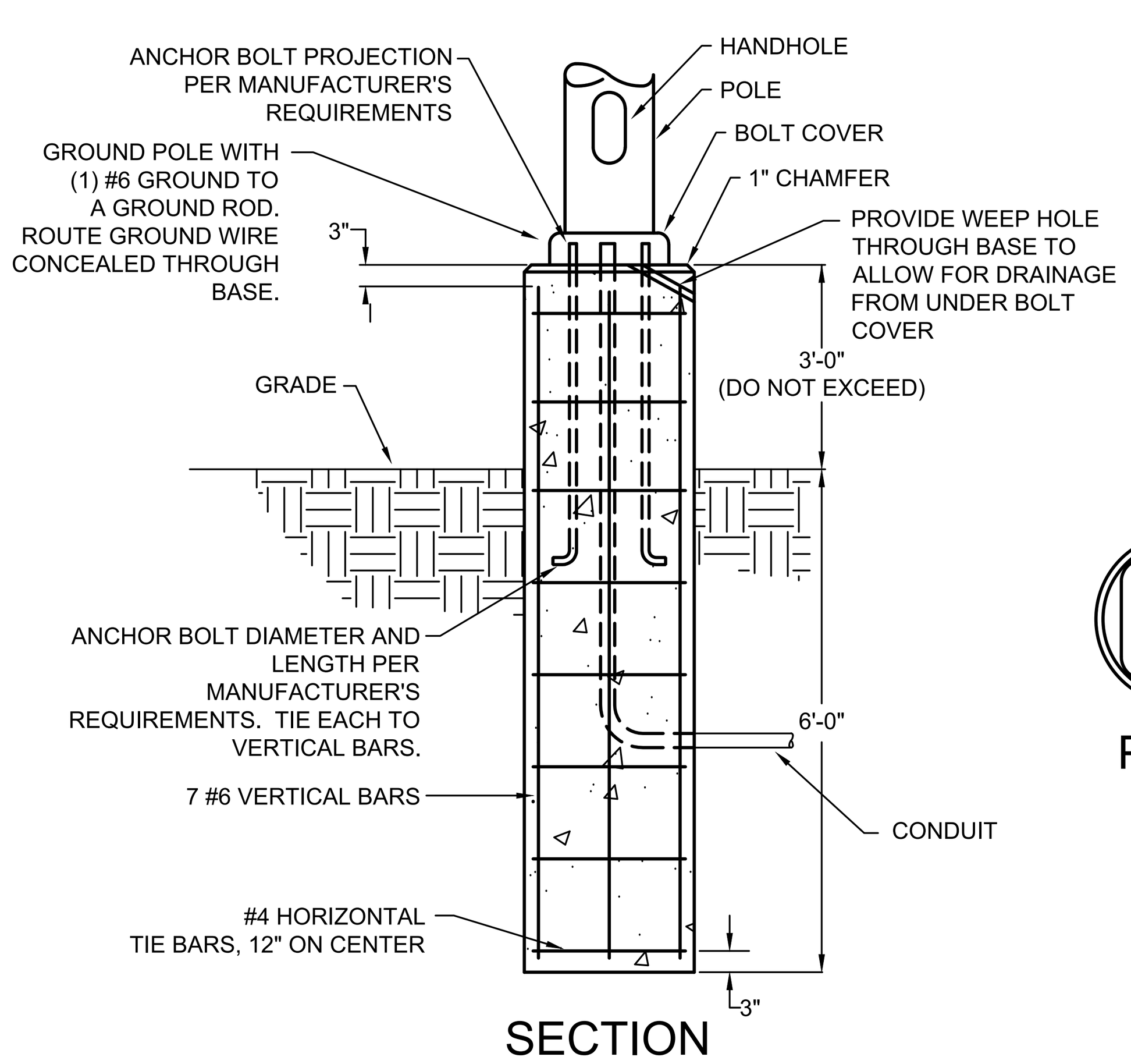
M2.0

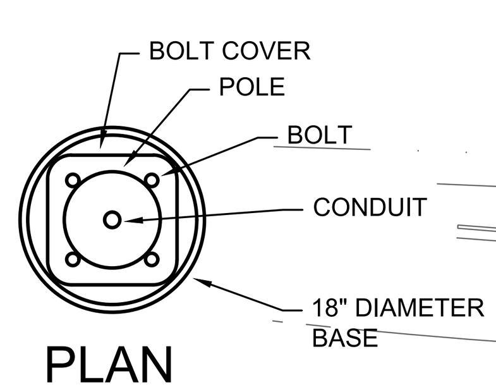
EXTERIOR LIGHT FIXTURE SCHEDULE

TAG	QUANTITY (CONFIRM WITH PLANS)	DESCRIPTION	VOLTAGE	MOUNTING	LAMPING			MANU/SERIES	VA
					QTY	WATTAGE	TYPE/COLOR TEMP		
PA	1	POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, BACKLIGHT CONTROL. TYPE 4 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	22' POLE	--	198	LED/4000K/ 27000LM	HUBBELL#RAR2	198
PB	2	POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR. TYPE 5 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	22' POLE	--	154	LED/4000K/ 21000LM	HUBBELL#RAR2	154
PC	9	POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, BACKLIGHT CONTROL. TYPE 2 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	15' POLE	--	294	LED/4000K/ 42000LM	HUBBELL#RAR2	294
PD	3	POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, BACKLIGHT CONTROL. TYPE 4 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	15' POLE	--	294	LED/4000K/ 42000LM	HUBBELL#RAR2	294
PE	2	POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, BACKLIGHT CONTROL. TYPE 5 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	22' POLE	--	294	LED/4000K/ 42000LM	HUBBELL#RAR2	294
PF	4	DOUBLE HEAD POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, BACKLIGHT CONTROL. TYPE 5 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	22' POLE	--	2@101	LED/4000K/ 15000LM	HUBBELL#RAR2	202
PG	6	DOUBLE HEAD POLE MOUNTED AREA LUMINAIRE. ONE PIECE HEAVY DUTY DIE-CAST ALUMINUM HOUSING SEALED AND WEATHER PROOFED, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, BACKLIGHT CONTROL. TYPE 5 LIGHT DISTRIBUTION, ARM MOUNTED ON A 4" SQUARE STEEL POLE. DARK BRONZE POWDER COAT FINISH.	277	22' POLE	--	2@175	LED/4000K/ 24000LM	HUBBELL#RAR2	350
Q	10	WALL MOUNTED LED WALL PACK FIXTURE WITH DIE CAST HOUSING AND POLYCARBONATE LENS. TYPE 4 LIGHT DISTRIBUTION, INTEGRAL PROGRAMMABLE OCCUPANCY SENSOR, DARK BRONZE FINISH. MOUNT AT 18' AFF.	120/277	SURFACE WALL	1	60	LED/4000K /5700LM	HUBBELL #LNC3-24L-4K-075-4-U-DBT-SCP	60

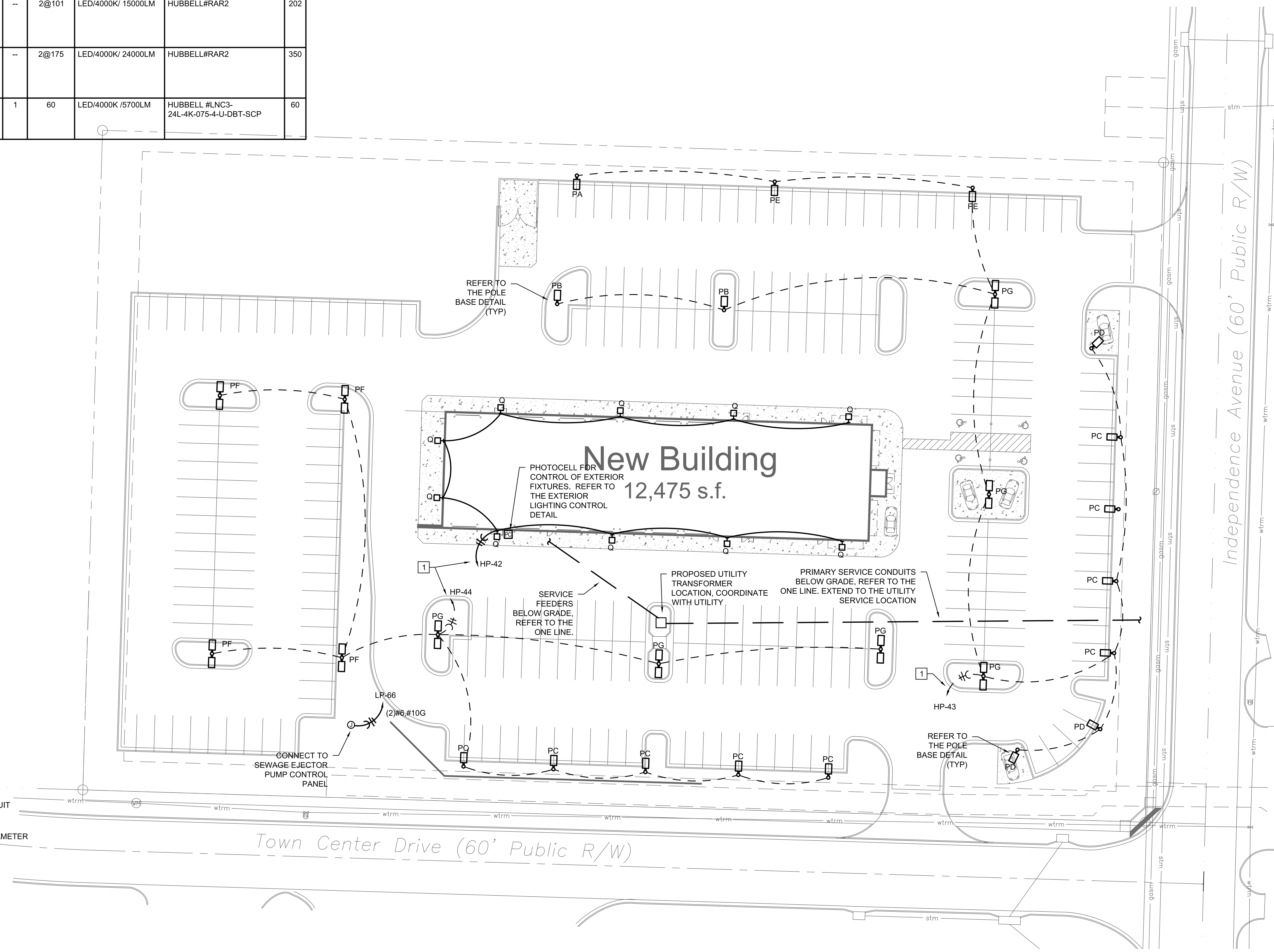


3 EXTERIOR LIGHTING CONTROL
NO SCALE





2 POLE BASE DETAIL
NO SCALE



1 SITE PLAN - ELECTRICAL
1" = 30'-0"

PLAN NOTES:

1. ROUTE THROUGH THE LIGHTING CONTACTOR 'LC-1' FOR CONTROL. REFER TO THE EXTERIOR LIGHTING CONTROL DETAIL.

STATE OF MISSOURI — CORY A. MITCHELL — PROFESSIONAL ENGINEER — 2/22/21

PROJECT NO.

REVISIONS

NOTE:

PROJECT: A New Facility for Automotive Sales and Detail Center
2150 NE Independence Avenue
Lee's Summit, Missouri 64064

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Commercial Residential

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DRAWING TITLE:
ELECTRICAL SITE PLAN

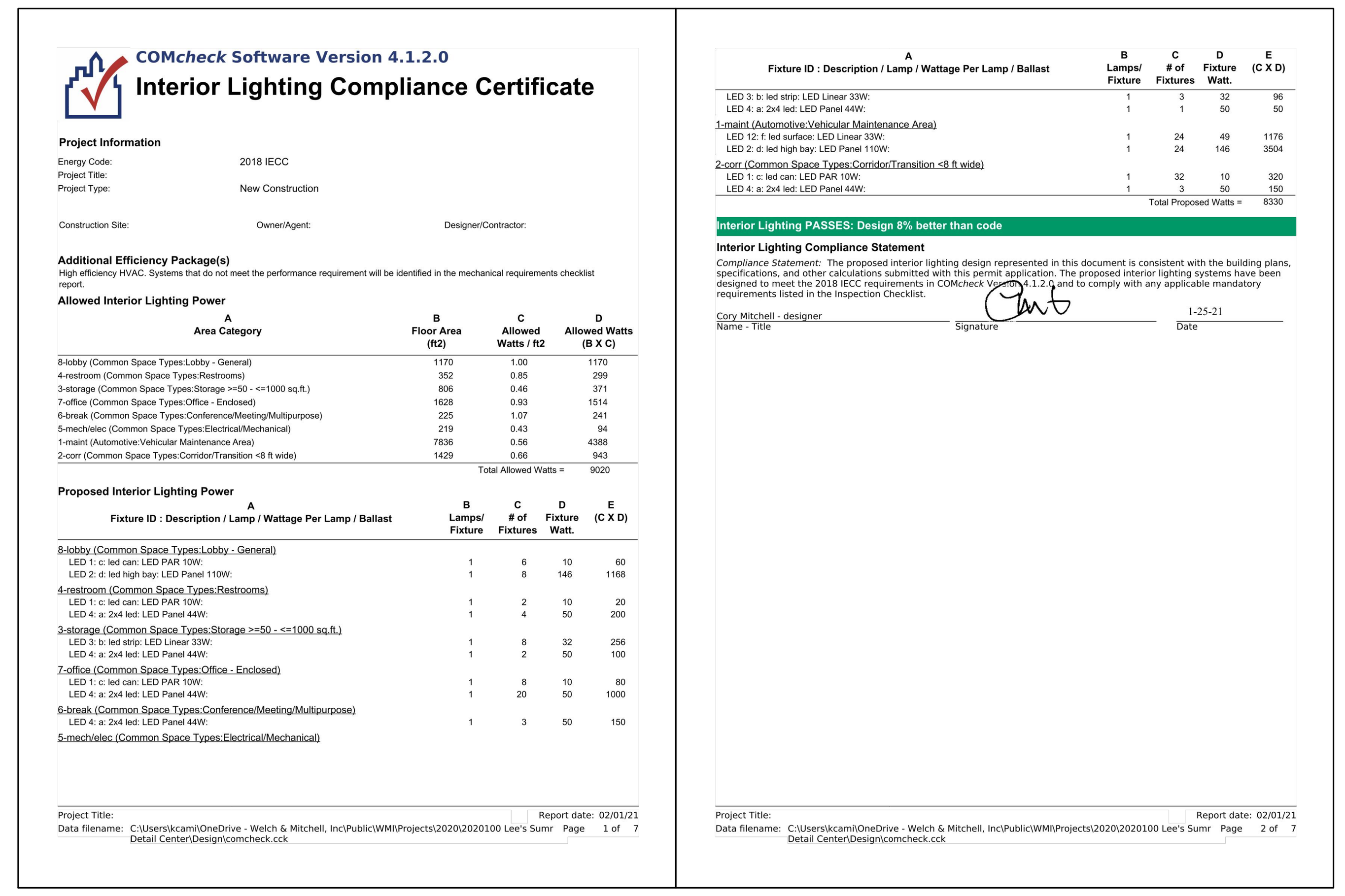
DRAWING SHEET NO.
E100

INTERIOR LIGHT FIXTURE SCHEDULE

TAG	QUANTITY (CONFIRM WITH PLANS)	DESCRIPTION	VOLTAGE	MOUNTING	LAMPING QTY	LAMPING WATTAGE	LAMPING TYPE/COLOR TEMP	VA
A	33	2'-0"X4'-0" RECESSED LED ARCHITECTURAL LENSED TROFFER. STEEL HOUSING AND DOOR FRAME WITH WHITE POWDER COAT FINISH, CAM ACTION STEEL LATCHES, ACRYLIC FROSTED LENS, 0-10V 10% DIMMING LED DRIVER.	120/277	RECESSED GRID	--	50	LED/3500K/ 5000 LUMEN	50
B	11	4'-0" LED STRIP FIXTURE. 22 GAUGE STEEL BASE, WHITE POWDER COAT FINISH, SEMI FROST LENS.	120/277	SURFACE	--	32	LED/3500K/ 3000 LUMEN	32
C	48	6" RECESSED LED FIXTURE, CLEAR SPECULAR REFLECTOR AND WHITE FLANGE	120/277	RECESSED	--	10	LED/ 3500K/ 80 CRI/ 1000 LUMEN	10
D	32	LED HIGH BAY FIXTURE.	120/277	CHAIN	--	146	LED	146
E	7	SURFACE MOUNTED SELF-CONTAINED EMERGENCY LIGHTING FIXTURE FOR WALL INSTALLATION. NI-CAD BATTERY, UV-STABLE PLASTIC HOUSING WITH WHITE FINISH. TWO FULLY ADJUSTABLE MR16 LAMPS WITH CLEAR PROTECTIVE LAMP LENS. PUSH TO TEST SWITCH, LED INDICATOR LIGHTS FOR AC SUPPLY, BATTERY CHARGE STATUS. 90 MINUTES OF BATTERY OPERATION.	120/277	SURFACE	2	1	LED	5
ER	8	TWIN HEAD REMOTE LED EMERGENCY FIXTURE WITH SINGLE MOUNTING PLATE. SUITABLE FOR WET LOCATIONS. COORDINATE VOLTAGE WITH BATTERY.		SURFACE	2	1.5	LED	0
F	24	4'-0" VAPORTITE LED FIXTURE. POLYCARBONATE HOUSING WITH HIGH IMPACT FROSTED POLYCARBONATE LENS.	120/277	SURFACE	--	49	LED/4000K/5300LM	49
X	3	LED EXIT SIGN, SINGLE OR DOUBLE FACE AS SHOWN ON DRAWINGS. THERMOPLASTIC HOUSING, RED LETTERING, SEALED NI-CAD BATTERY, MINIMUM 90 MINUTE CAPACITY. DRAWINGS INDICATE ARROWS.	120/277	UNIVERSAL	1	--	LED	5
X2	8	SINGLE FACE LED EXIT SIGN, THERMOPLASTIC HOUSING, RED LETTERING, SEALED NI-CAD HIGH OUTPUT BATTERY SUITABLE FOR POWERING INTEGRAL LED HEADS AND REMOTE LED HEADS, INTEGRAL EMERGENCY LAMPS, MINIMUM 90 MINUTE CAPACITY. DRAWINGS INDICATE ARROWS.	120/277	WALL	3	6	LED	5

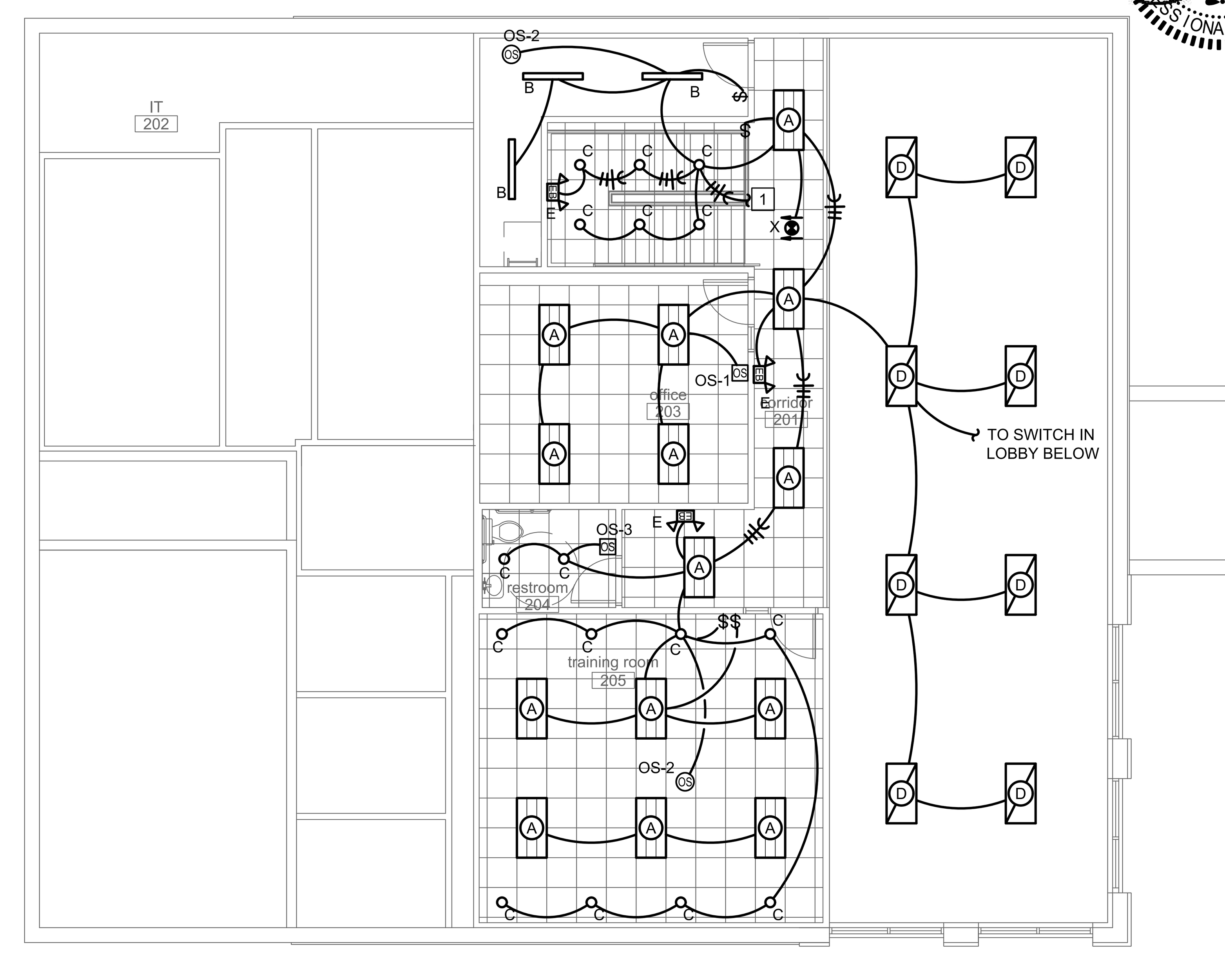
OCCUPANCY SENSOR SCHEDULE

TAG	QTY (CONFIRM WITH PLANS)	MANUFACTURER	MODEL	MOUNTING	TYPE	TIME DELAY SETTING	NOTES
OS-1	10	LEVITON	MDS10-ID	WALL	PASSIVE INFRARED	15 MIN	
OS-2	5	LEVITON	OSC10-RMW	CEILING	DUAL TECHNOLOGY	15 MIN	FURNISH WITH POWER PACK(S) AND ISOLATED RELAY
OS-3	1	LEVITON	OSSMD-MD	WALL	DUAL TECHNOLOGY	15 MIN	2 BUTTON WITH ISOLATED RELAY FOR CONTROL OF ROOM EXHAUST FAN.

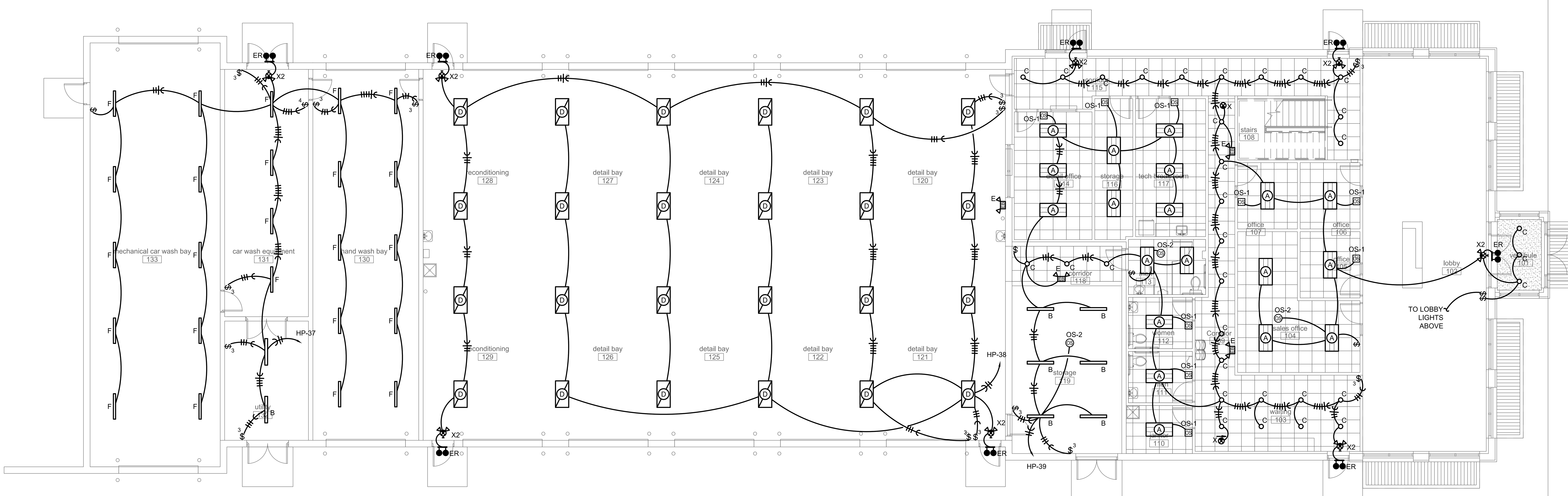


PLAN NOTES:

1. TO SWITCHED AND UNSWITCHED LIGHTING CIRCUIT BELOW.



2 MEZZANINE FLOOR PLAN - LIGHTING
1/8"=1'-0"



1 MEZZANINE FLOOR PLAN - LIGHTING
1/8"=1'-0"

PROJECT NO.

REVISIONS

NOTE:

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STATE OF MISSOURI — CORY A. MITCHELL — PROFESSIONAL ENGINEER — 2/22/21

SCALE:
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CAD FILE:
DRAWING TITLE:
LIGHTING PLAN

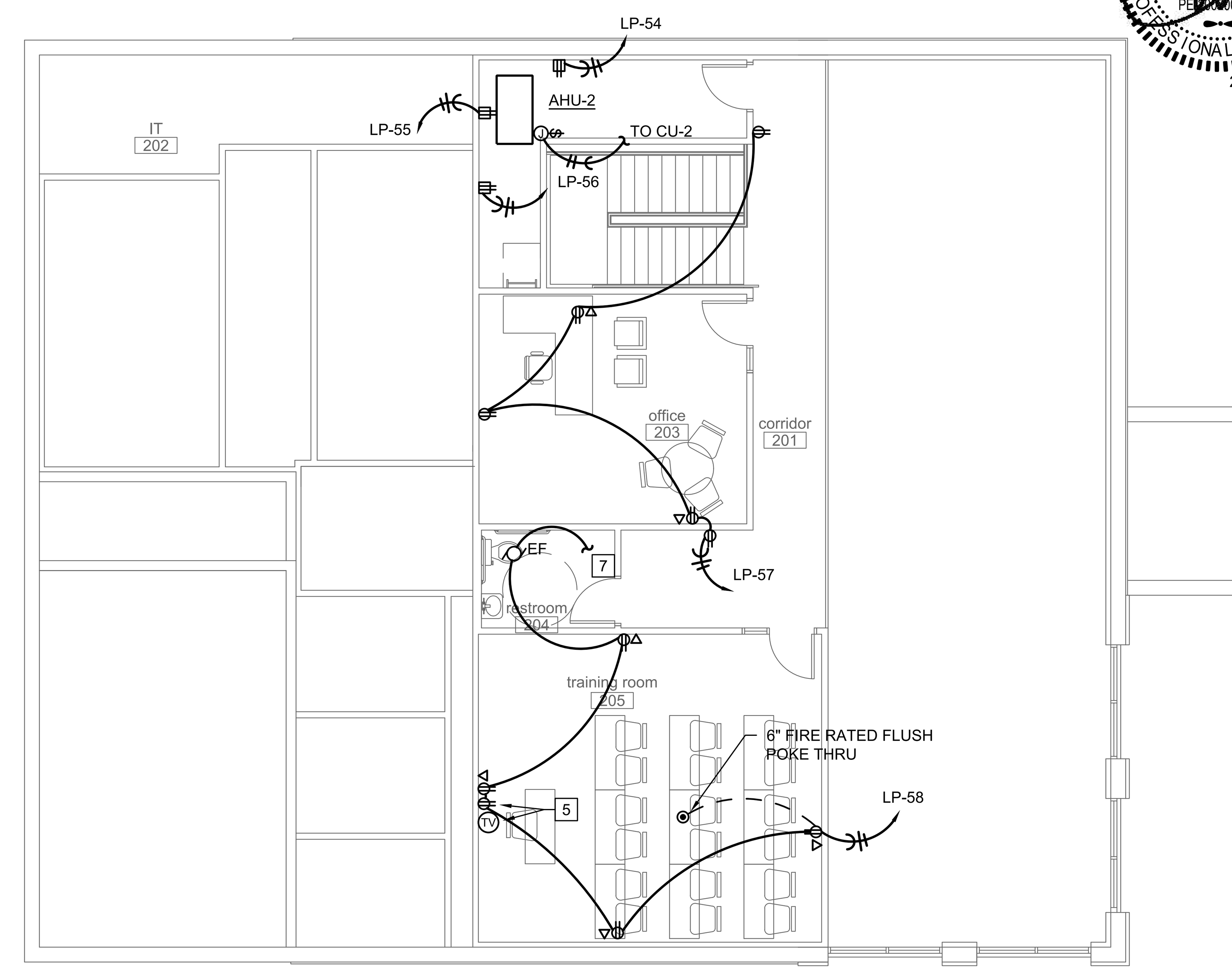
DRAWING SHEET NO.
E101

GENERAL NOTES:

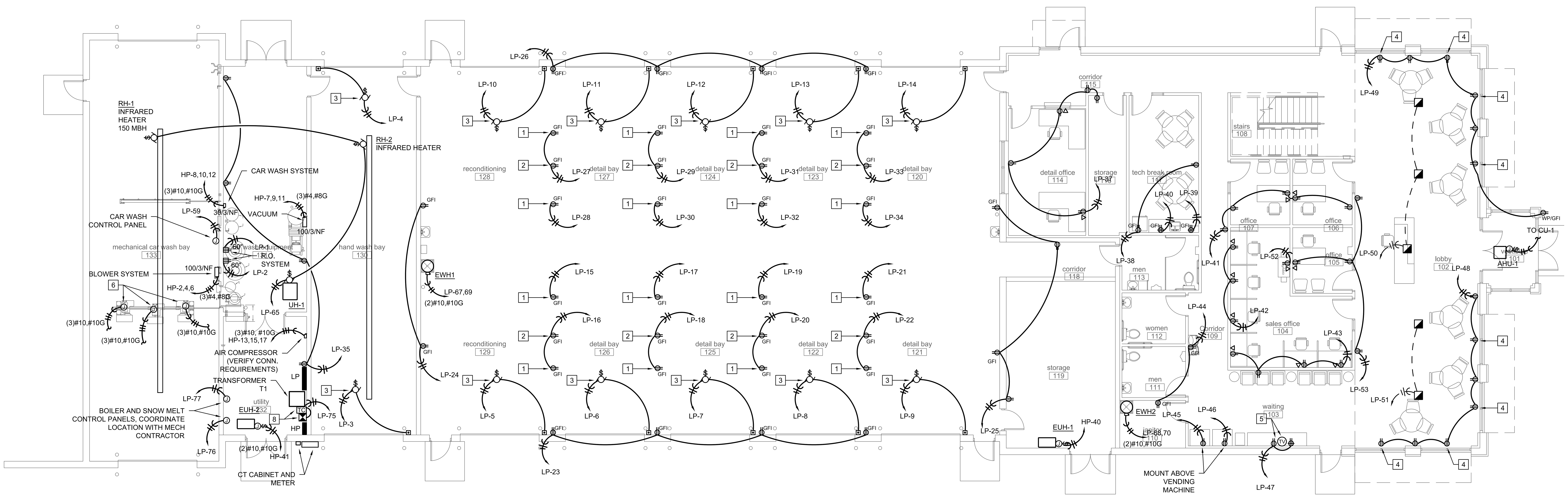
1. ALL WIRE SIZES BASED ON COPPER CONDUCTORS UNLESS NOTED OTHERWISE.
2. PRIOR TO ROUGH IN, COORDINATE EXACT CONNECTION REQUIREMENTS WITH THE CAR WASH EQUIPMENT FURNISHED. PROVIDE INTERCONNECTIONS BETWEEN EQUIPMENT AS DETAILED ON THE CAR WASH SYSTEM DRAWINGS FURNISHED BY THE MANUFACTURER.

PLAN NOTES:

1. MOUNT STRUCTURE ABOVE FOR CORD REEL. CORD REEL FURNISHED BY OWNER.
2. MOUNT AT STRUCTURE ABOVE FOR LIGHTED REEL. CORD REEL FURNISHED BY OWNER.
3. CONNECT TO OVERHEAD DOOR.
4. MOUNT ABOVE WINDOW.
5. COORDINATE MOUNTING HEIGHT AND LOCATION WITH TV.
6. CONNECT TO BLOWER. CIRCUIT TO THE BLOWER SYSTEM CONTROL PANEL/DISCONNECT SWITCH PER THE MANUFACTURER'S INSTALLATION DRAWINGS.
7. CONNECT TO AUXILIARY RELAY ON ROOM OCCUPANCY SENSOR FOR CONTROL.
8. PROVIDE 4-POLE ELECTRICALLY HELD CONTACTOR 'LC-1' AND 7-DAY MECHANICAL TIMECLOCK FOR CONTROL OF EXTERIOR LIGHTING. REFER TO THE EXTERIOR LIGHTING CONTROL DETAIL



2 MEZZANINE FLOOR PLAN - POWER
1/8"=1'-0"



1 MEZZANINE FLOOR PLAN - POWER
1/8"=1'-0"

STATE OF MISSOURI
CORY A. MITCHELL
PROFESSIONAL ENGINEER
2/22/21

PROJECT NO.

REVISIONS

NOTE:

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DRAWING TITLE:	
POWER PLAN	

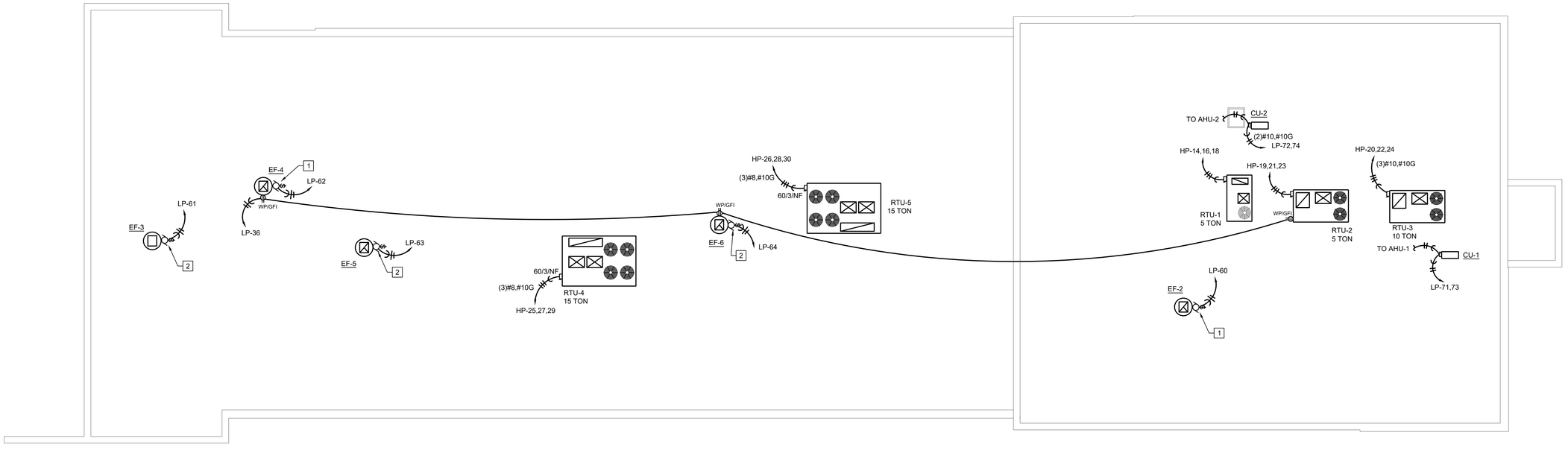
DRAWING SHEET NO.

E102

2/22/21

PLAN NOTES:

1. COORDINATE CONTROL REQUIREMENTS WITH MECHANICAL CONTRACTOR.
2. INTERLOCK WITH GAS DETECTION SYSTEM, COORDINATE WITH MECHANICAL CONTRACTOR.



1 ROOF PLAN - ELECTRICAL
1/8"=1'-0"

PROJECT NO.	REVISIONS							NOTE:

A New Facility for
Automotive Sales and Detail Center
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Lee's Summit, Missouri 64064

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DATE: 2/22/21	
CAD FILE:	

DRAWING TITLE:

ELECTRICAL ROOF PLAN

DRAWING SHEET NO.

E103

Panel HP Schedule

VOLTAGE: 277/480 V | BUS RATING: 400 A | MOUNTING: SURFACE | FED FROM: ----
PHASE/WIRE: 3 PH /4 W | MAIN TYPE & SIZE: 400 A MCB | MIN AIC: 18000

CIRC	CIRCUIT DESCRIPTION	OCPD AMP	OCPD POLE	PHASE LOAD VA A		B		C		OCPD POLE	OCPD AMP	CIRCUIT DESCRIPTION	CIRC
1,3,5	PANEL LP via Transformer	90	3	27394	18000	25988	18000	24865	18000	3	80	CAR WASH BLOWER	2,4,6
7,9,11	CAR WASH VACUUM	100	3	14404	6650	14404	6650	14404	6650	3	30	CAR WASH SYSTEM	8,10,12
13,15,17	AIR COMPRESSOR	30	3	3864	2683	3864	2683	3864	2683	3	20	RTU-1	14,16,18
19,21,23	RTU-2	20	3	2683	5400	2683	5400	2683	5400	3	30	RTU-3	20,22,24
25,27,29	RTU-4	35	3	7050	7050	7050	7050	7050	7050	3	35	RTU-5	26,28,30
31,33,35	SPACE	0	3	0	0	0	0	0	0	3	0	SPACE	32,34,36
37	LIGHTING	20	1	1245	3519	0	0	0	0	1	20	LIGHTING	38
39	LIGHTING	20	1	0	0	3651	3000	0	0	1	15	EUH-1	40
41	EUH-2	25	1	0	0	0	0	4800	600	1	20	EXT BUILDING LIGHTING	42
43	EXTERIOR LIGHTING	20	1	4202	3328	0	0	0	0	1	20	EXTERIOR LIGHTING	44
45	SPACE	0	1	0	0	0	0	0	0	1	0	SPACE	46
47	SPACE	0	1	0	0	0	0	0	0	1	0	SPACE	48
49,51,53	SPACE	0	3	0	0	0	0	0	0	3	30	SPACE (SOLAR PNLS)	50,52,54
	TOTAL CONN. PHASE LOAD			107472		100423		98049					

LOAD CATEGORY	CONN. LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Heat	9.3	0.00	0.0
Lighting	16.5	1.25	20.7
Motor - Air Conditioning	57.0	1.00	57.0
Motor - Air Conditioning (Largest)	21.1	1.25	26.4
Motor - Non AC	79.2	1.00	79.2
Motor - Non AC (Largest)	54.0	1.25	67.5
Other	30.4	1.00	30.4
Receptacles (0 - 10 KVA)	10.0	1.00	10.0
Receptacles (Over 10 KVA)	28.4	0.50	14.2
TOTAL	305.9		305.4
TOTAL DEMAND	367.4	AMPS	
TOTAL PANEL SPARE	32.6	AMPS	

NOTES: GFI - GROUND FAULT CIRCUIT BREAKER
LCK - HANDLE PADLOCK ATTACHMENT
ST - SHUNT TRIP

Panel LP Schedule

VOLTAGE: 120/208 V | BUS RATING: 225 A | MOUNTING: SURFACE | FED FROM: HP
PHASE/WIRE: 3 PH /4 W | MAIN TYPE & SIZE: 200 A MCB | MIN AIC: 18000

CIRC	CIRCUIT DESCRIPTION	OCPD AMP	OCPD POLE	PHASE LOAD VA A		B		C		OCPD POLE	OCPD AMP	CIRCUIT DESCRIPTION	CIRC
1	RO SYSTEM	20	1	1600	1600	0	0	0	0	1	20	RO SYSTEM	2
3	OH DOOR HAND WASH	20	1	0	0	1176	1176	0	0	1	20	OH DOOR HAND WASH	4
5	OH DOOR DETAIL BAY	20	1	0	0	0	0	1176	1176	1	20	OH DOOR DETAIL BAY	6
7	OH DOOR DETAIL BAY	20	1	1176	1176	0	0	0	0	1	20	OH DOOR DETAIL BAY	8
9	OH DOOR DETAIL BAY	20	1	0	0	1176	1176	0	0	1	20	OH DOOR DETAIL BAY	10
11	OH DOOR DETAIL BAY	20	1	0	0	0	0	1176	1176	1	20	OH DOOR DETAIL BAY	12
13	OH DOOR DETAIL BAY	20	1	1176	1176	0	0	0	0	1	20	OH DOOR DETAIL BAY	14
15	CORD REEL DETAIL BAY	20	1	0	0	750	765	0	0	1	20	CORD REEL DETAIL BAY	16
17	CORD REEL DETAIL BAY	20	1	0	0	0	0	750	765	1	20	CORD REEL DETAIL BAY	18
19	CORD REEL DETAIL BAY	20	1	750	765	0	0	0	0	1	20	CORD REEL DETAIL BAY	20
21	CORD REEL DETAIL BAY	20	1	0	0	750	765	0	0	1	20	CORD REEL DETAIL BAY	22
23	RECEPTS DETAIL BAY	20	1	0	0	0	0	720	360	1	20	RECEPTS DETAIL BAY	24
25	RECEPTS DETAIL BAY	20	1	720	720	0	0	0	0	1	20	RECEPTS DETAIL BAY	26
27	CORD REEL DETAIL BAY	20	1	0	0	765	750	0	0	1	20	CORD REEL DETAIL BAY	28
29	CORD REEL DETAIL BAY	20	1	0	0	0	0	765	750	1	20	CORD REEL DETAIL BAY	30
31	CORD REEL DETAIL BAY	20	1	765	750	0	0	0	0	1	20	CORD REEL DETAIL BAY	32
33	CORD REEL DETAIL BAY	20	1	0	0	765	750	0	0	1	20	CORD REEL DETAIL BAY	34
35	EQUIPT/ELEC RM REC	20	1	0	0	0	0	720	540	1	20	ROOF RECEPTS	36
37	DETAIL OFFICE RECEPTS	20	1	900	680	0	0	0	0	1	20	TECH BREAK RECEPTS	38
39	TECH BREAK RECEPTS	20	1	0	0	1000	1000	0	0	1	20	TECH BREAK RECEPTS	40
41	OFFICE RECEPTS	20	1	0	0	0	0	900	540	1	20	SALES OFFICE REC	42
43	SALES OFFICE REC	20	1	720	660	0	0	0	0	1	20	EDF/JAN RECEPT	44
45	VENDING	20	1	0	0	1000	1000	0	0	1	20	VENDING	46
47	WAITING RECEPTS	20	1	0	0	0	0	360	1260	1	20	LOBBY RECEPTS	48
49	LOBBY RECEPTS	20	1	1260	1080	0	0	0	0	1	20	LOBBY FLOOR BOXES	50
51	LOBBY FLOOR BOXES	20	1	0	0	720	1000	0	0	1	20	SALES COPIER	52
53	OFFICE/LOBBY RECEPTS	20	1	0	0	0	0	720	750	1	20	I.T. RECEPT	54
55	I.T. RECEPT	20	1	750	750	0	0	0	0	1	20	I.T. RECEPT	56
57	MEZZ OFFICE RECEPTS	20	1	0	0	900	1420	0	0	1	20	TRAINING RECEPTS	58
59	CAR WASH CONT PNL	20	1	0	0	0	0	500	528	1	20	EF-2	60
61	EF-3	20	1	696	528	0	0	0	0	1	20	EF-4	62
63	EF-5	20	1	0	0	528	1656	0	0	1	20	EF-6	64
65	GAS HEATERS	20	1	0	0	0	0	477	5760	1	60	EJECTOR PUMP	66
67,69	EWH-1	30	2	2250	2250	2250	2250	0	0	2	30	EWH-2	68,70
71,73	CU-1/AHU-1	15	2	728	1768	0	0	728	1768	2	30	CU-2/AHU-2	72,74
75	LTG TIMECLOCK/CONT	20	1	0	0	0	500	0	0	1	20	BOILER CONT PANEL	76
77	SNOW MELT CONT PANEL	20	1	0	0	0	0	500	0	1	20	SPARE	78
79	SPARE	20	1	0	0	0	0	0	0	1	20	SPARE	80
81	SPARE	20	1	0	0	0	0	0	0	1	20	SPARE	82
83	SPARE	20	1	0	0	0	0	0	0	1	20	SPARE	84
	TOTAL CONN. PHASE LOAD			27394		25988		24865					

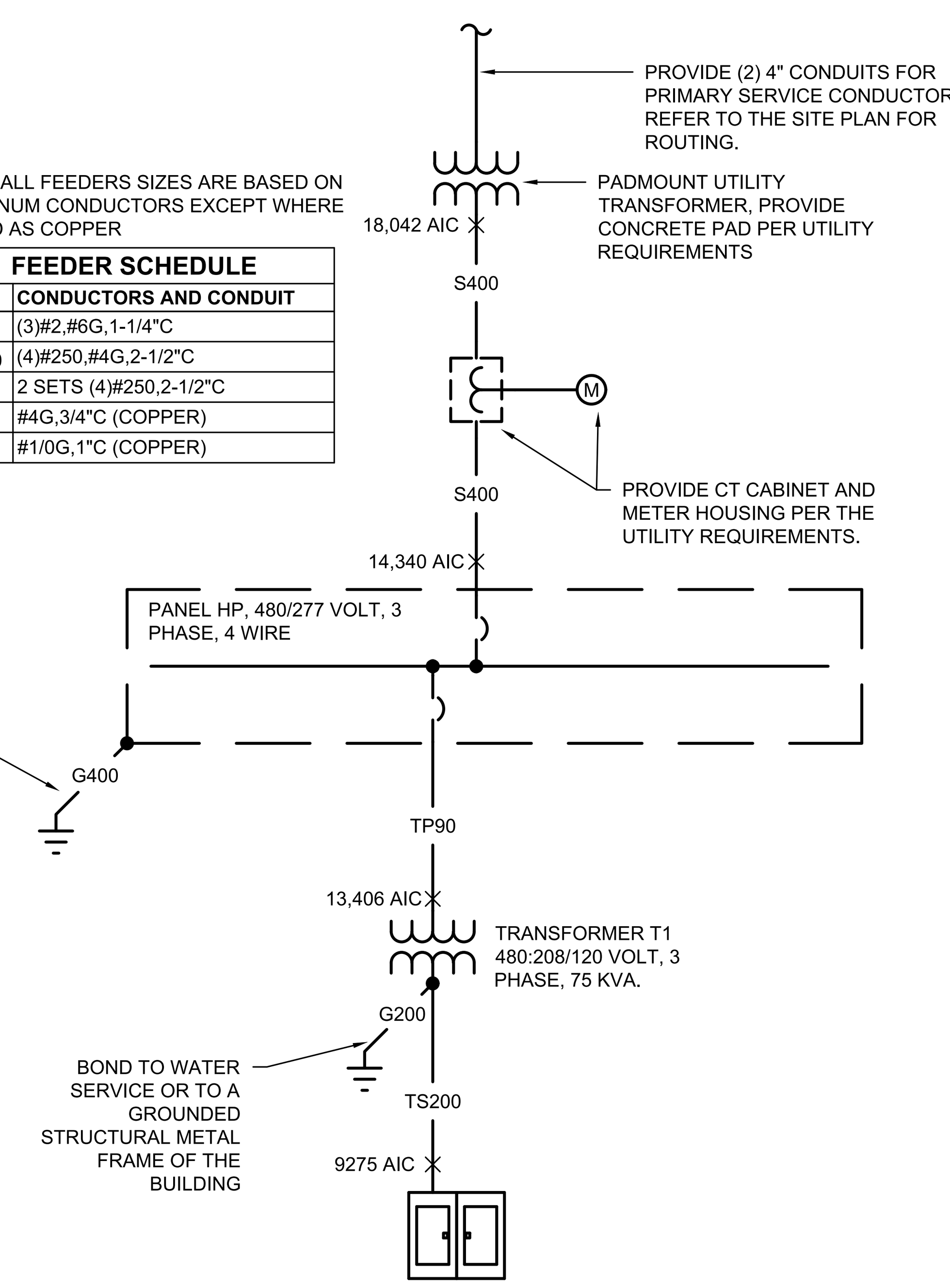
LOAD CATEGORY	CONN. LOAD (KVA)	DEMAND FACTOR	DEMAND LOAD (KVA)
Heat	1.5	0.00	0.0
Lighting	0.0	1.25	0.0
Motor - Air Conditioning	0.0	1.00	0.0
Motor - Air Conditioning (Largest)	3.5	1.25	4.4
Motor - Non AC	18.6	1.00	18.6
Motor - Non AC (Largest)	5.8	1.25	7.2
Other	10.5	1.00	10.5
Receptacles (0 - 10 KVA)	10.0	1.00	10.0
Receptacles (Over 10 KVA)	28.4	0.50	14.2
TOTAL	78.2		64.9
TOTAL DEMAND	180.3	AMPS	
TOTAL PANEL SPARE	19.7	AMPS	

NOTES: GFI - GROUND FAULT CIRCUIT BREAKER
LCK - HANDLE PADLOCK ATTACHMENT
ST - SHUNT TRIP

NOTE: ALL FEEDERS SIZES ARE BASED ON ALUMINUM CONDUCTORS EXCEPT WHERE NOTED AS COPPER

FEEDER SCHEDULE

TAG	CONDUCTORS AND CONDUIT
TP90	(3)#2,#6G,1-1/4"C
TS200	(4)#250,#4G,2-1/2"C
S400	2 SETS (4)#250,2-1/2"C
G200	#4G,3/4"C (COPPER)
G400	#1/0G,1"C (COPPER)



2 ELECTRICAL ONE-LINE DIAGRAM
NO SCALE

GENERAL

- ELECTRICAL NOTE REFERENCE
- REVISION NOTE REFERENCE
- CONNECT TO EXISTING WORK
- DETAIL REFERENCE - NO./SHEET NO. (X / XX)

CONDUIT AND WIRE

- (IG, LP-1) CONDUIT HOMERUN TO PANEL NOTED WITH (2)#12 AND (1)#12 AWG GROUND UNLESS NOTED OTHERWISE. SHORT TICK MARKS INDICATE CONDUCTORS, LONG MARKS INDICATE NEUTRAL CONDUCTORS.
- GROUND WIRE. #12 AWG UNLESS NOTED OTHERWISE.
- CONDUIT CONCEALED IN WALL OR ABOVE CEILING WITH (2)#12 AND (1)#12 AWG GROUND UNLESS NOTED OTHERWISE.
- CONDUIT BELOW GRADE OR FLOOR WITH WITH (2)#12 AND (1)#12 AWG GROUND UNLESS NOTED OTHERWISE.

LIGHTING

NOTE: FIXTURE DESIGNATIONS INDICATE TYPE, REFER TO LIGHT FIXTURE SCHEDULE

- (EB) WALL/CEILING MOUNTED EMERGENCY LIGHTING UNIT
- LIGHT FIXTURE
- (NL) NIGHT LIGHT FIXTURE
- CEILING MOUNTED SURFACE/RECESSED LIGHT
- CEILING MOUNTED SURFACE/RECESSED WALLWASH LIGHT. ARROW INDICATES DIRECTION.
- LIGHT FIXTURE WITH EMERGENCY BALLAST
- TRACK LIGHT
- POLE MOUNTED SITE LIGHT FIXTURE
- CEILING/WALL MOUNTED EXIT LIGHT. SHADING INDICATES FACES, ARROWS AS INDICATED

WIRING DEVICES

NOTE: REFER TO SPECIFICATIONS FOR MOUNTING HEIGHTS NOT LISTED.

- SIMPLEX, DUPLEX, AND QUAD RECEPTACLE. MOUNT AT 18" AFF TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.
- ABOVE COUNTER RECEPTACLE, MOUNT 5" ABOVE BACKSPLASH OR COUNTER TOP, WHICHEVER IS HIGHER.
- (GFI GFI GFI) RECEPTACLE DESIGNATIONS:
  - GFI - GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE
  - WP - WEATHER RESISTANT RECEPTACLE WITH 'IN-USE' COVER.
  - U - DUPLEX RECEPTACLE WITH (2) USB CHARGING PORTS, LEVITON T5832 OR EQUAL
- $ WALL SWITCH, SINGLE POLE. MOUNT AT 46" AFF TO CENTER OF DEVICE UNLESS NOTED OTHERWISE
- $^3 WALL SWITCH DESIGNATIONS:
  - 3 - THREE POLE SWITCH
  - 4 - FOUR-WAY WALL SWITCH
  - D - WALLBOX DIMMER
- (OS MS-1) MOTION SENSOR, CEILING MOUNTED. DESIGNATION INDICATES TYPE - REFER TO OCCUPANCY SENSOR SCHEDULE
- (OS MS-1) MOTION SENSOR, WALL MOUNTED. DESIGNATION INDICATES TYPE - REFER TO OCCUPANCY SENSOR SCHEDULE. MOUNT AT 46" AFF TO CENTER OF DEVICE
- MULTI-SERVICE FLOOR BOX
- FLOOR BOX W/DUPLEX RECEPTACLE
- (6-20R) NEMA RECEPTACLE, DESIGNATION INDICATES NEMA TYPE.

COMMUNICATIONS

- TELEPHONE OUTLET
- DATA OUTLET
- TELEPHONE/DATA OUTLET
- ABOVE COUNTER DEVICE, MOUNT 5" ABOVE BACKSPLASH OR COUNTER TOP, WHICHEVER IS HIGHER.
- (TV) TELEVISION OUTLET
- PLYWOOD BOARD FOR EQUIPMENT MOUNTING

POWER DEVICE AND CONTROLS

- (30/3/NF) DISCONNECT SWITCH. 30/3/NF INDICATES AMPERAGE, NUMBER OF POLES, AND FUSING. NF = NON FUSED. MATCH CIRCUIT VOLTAGE. 240 VOLT, 3 POLE, 30 AMP NON FUSED IF BLANK.
- MOTOR
- PANELBOARD
- CONTACTOR
- (PC) PHOTOCELL
- (J) JUNCTION BOX
- PUSHBUTTON
- (T) TRANSFORMER
- (TC) TIMECLOCK

FIRE ALARM

MOUNT VISIBLE NOTIFICATION DEVICES WITH LENS AT 80-96" AFF AND A MINIMUM OF 6" BELOW CEILING. MOUNT HORNS AT 88" TO TOP OF DEVICE.

- (F) MANUAL PULL STATION
- (S) SMOKE DETECTOR
- (S_D) DUCT MOUNTED SMOKE DETECTOR
- (S) SINGLE/ MULTIPLE STATION SMOKE DETECTOR.
- (H) HEAT DETECTOR
- (L 110) WALL MOUNTED VISIBLE NOTIFICATION DEVICE. NUMBER INDICATES CANDELA RATING, 110 CD IF NOT NOTED.
- (HS 110) WALL MOUNTED COMBINATION VISIBLE/AUDIBLE NOTIFICATION DEVICE. NUMBER INDICATES CANDELA RATING, 110 CD IF NOT NOTED.
- (FS) FIRE PROTECTION SYSTEM WATER FLOW SWITCH
- (TS) FIRE PROTECTION SYSTEM VALVE TAMPER SWITCH
- (FACP) FIRE ALARM CONTROL PANEL
- (FAAP) FIRE ALARM ANNUCIATOR PANEL

ELECTRICAL ONE-LINE DIAGRAM

- PANELBOARD
- TRANSFORMER
- GROUNDING ELECTRODE
- METER
- (XXX) FEEDER. "XXX" INDICATES FEEDER NUMBER, REFER TO FEEDER SCHEDULE FOR CIRCUIT CONDUCTORS AND CONDUIT SIZE.
- CIRCUIT BREAKER. XX/XP INDICATES AMPERAGE AND NUMBER OF POLES.
- FUSED SWITCH. XX/XX/XX INDICATES AMPERAGE, NUMBER OF POLES, AND FUSING.
- MOTOR

1 ELECTRICAL SYMBOLS
NO SCALE

STATE OF MISSOURI
CORY A. MITCHELL
PROFESSIONAL ENGINEER
2/22/21

PROJECT NO.
REVISIONS
NOTE:

PROJECT: A New Facility for
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Commercial Residential

SCALE:
DRAWN BY:
ENGINEER: CAM
CHECK BY:
DATE: 2/22/21
CAD FILE:
DRAWING TITLE:
ELECTRICAL SCHEDULES

DRAWING SHEET NO.
E201