CIVIL PLANS FOR
LOTS 13, 14, 21, & 22 OF
I-470 BUSINESS AND TECHNOLOGY CENTER
SECTION 20, TOWNSHIP 48, RANGE 31
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

GENERAL

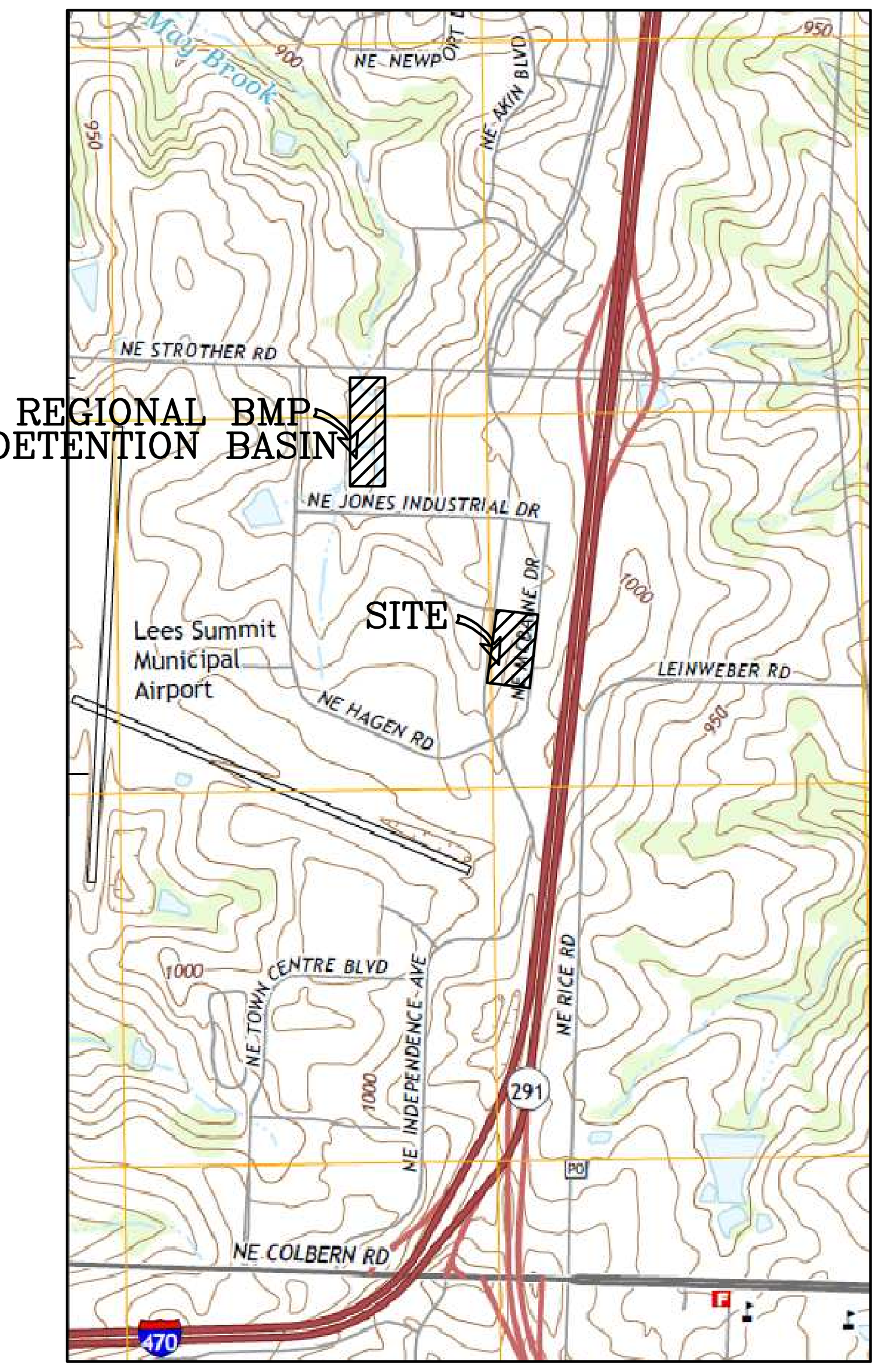
1. Lineal foot measurements shown on the plans are horizontal measurements, not slope measurements. All payments shall be made on horizontal measurements.
2. No geological information is shown on these plans.
3. The utility locations shown on these plans are taken from utility company records and are approximate only. They do not constitute actual field locations. The contractor shall verify the location and depth of all utilities prior to construction.
4. The contractor shall adhere to the provisions of the Senate Bill Number 583,78th General Assembly of the State of Missouri. The bill requires that any person of firm doing excavation on public right-of-way do so only after giving notice to, and obtaining information from, utility companies. State law requires 48 hours advance notice. The names and telephone numbers of utility companies, even if only remotely involved with this project are provided. 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.
5. All waste material resulting from the project shall be disposed of off-site by the contractor.
6. All excavation shall be unclassified. No separate payment will be made for rock excavation.
7. The contractor shall control the erosion and siltation during all phases construction, and he shall keep the streets clean of mud and debris.
8. All manholes, catch basins, utility valves and meter pits to be adjusted or rebuilt to grade as required. All existing utilities shall be adjusted as required.
9. Subgrade soil for all concrete structures, regardless of the type or location, shall be firm, dense and thoroughly compacted and consolidated: shall be free from muck and mud; and shall be sufficiently stable to remain firm and intact under the feet of the
10. workmen or machinery engaged in subgrade surfacing, laying reinforcing steel, and depositing concrete thereon. In all cases where subsoil is mucky or works into mud or muck during such operation, a seal course of either concrete or rock shall be placed below subgrade to provide a firm base for working and for placing the floor slab.
11. The contractor is responsible for providing all surveying that may be required.
12. Easements indicated on these drawings will be provided for on the final plat and properly dimensions. Easements outside the platted area will be provided for by separate documents prior to issuance of a construction permit.

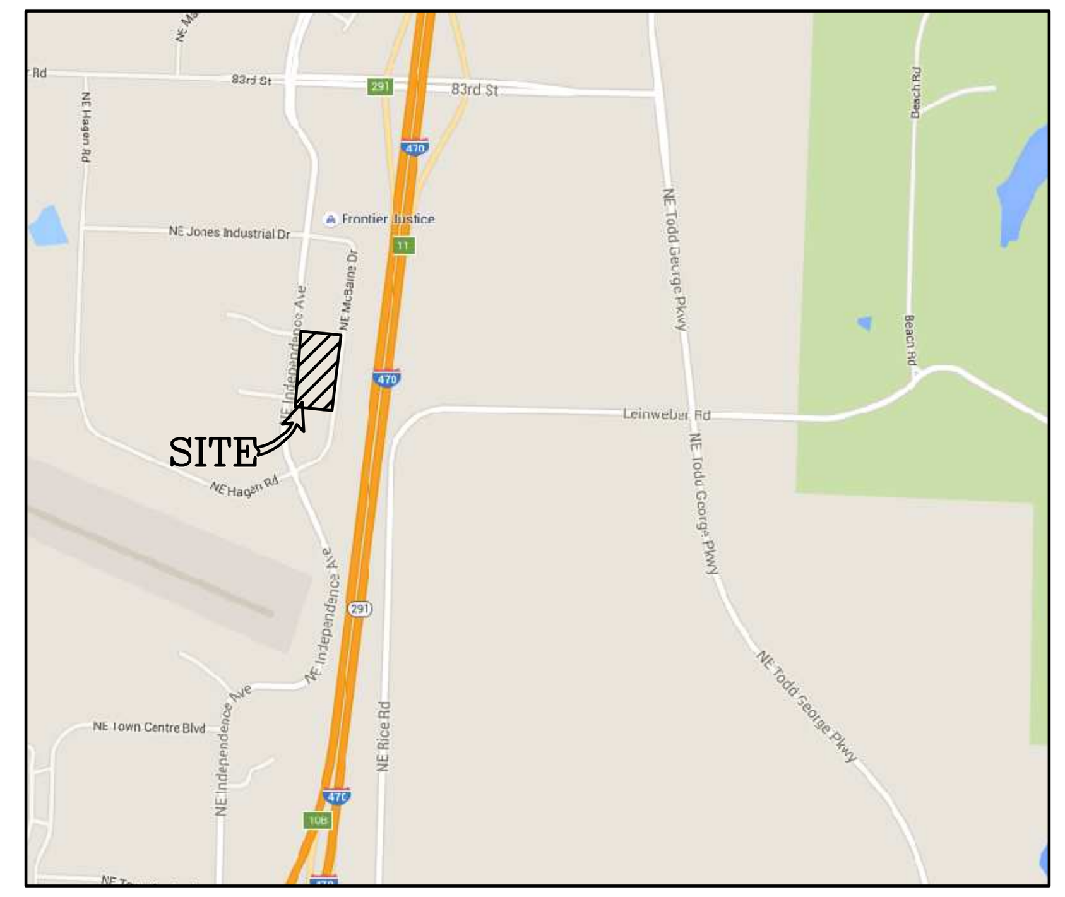
STREETS & STORM SEWER

1. All construction shall follow the City of Lee's Summit Design and Consrtuction Manual as adopted by Ordinace 5813.
2. High Density Plastic Pipe (HDPE) shall conform to A.A.S.H.T.O. M-294.
3. Reinforced Concrete Pipe (RCP) shall conform to ASTM Designation C-76-62T (Class III).
4. Curb Return Radius, 15' minimum unless shown otherwise.
5. The top 6" of roadway subgrade shall be undercut and compacted to minimum 95% of maximum density at optimum moisture as determined by AASHO T99, Method B. Contractor shall provide for moisture-density and relative density tests on roadway subgrade by an accepted testing firm. Contractor shall provide for in-place density test on compacted subgrade by an accepted testing firm. In-place density test shall be conducted every 50-feet along the proposed roadway. Contractor shall provide testing results to Engineer.
6. All Flared End Sections shall be installed with Toe Wall. (See Toe Wall Detail on Storm Sewer Detail Sheet)

WATER

1. All construction shall follow the City of Lee's Summit Design and Consrtuction Manual as adopted by Ordinace 5813 and with all the requirements of the Missouri Department of Health and Missouri Clean Water Commission.
2. Class 50 Ductile Iron Pipe or C900 pipe shall be used per city specifications
3. All fittings shall be lined inside and out with an asphaltic base or bitumastic coating, and shall be megalug.
4. Fire Hydrants shall be Waterous Pacer WB-67 with non-rising stem or approved equal by the City Engineer. Hydrants shall have 5 1/4" valve with 4 1/2" pumper nozzle and 2-2 1/2" hose nozzles (left hand opening).
5. Gate Valves to be A.P. Smith series 1000 or Mueller No. A 2380-5 hub end "O" ring seal non-rising stem, valves 12 inches and larger shall be Butterfly valves manufactured by the Henry Pratt Company or City Engineer Approved equal Left hand opening minimum 200# testing AWWA.
6. Valve boxes shall be Clay & Bailey # p-108 or approved equal. All boxes to be installed out of pavement areas.
7. Water lines are to be constructed to a depth of 4 feet below and back of street curbs. Street grading is to be complete prior to waterline placement.
8. Easements for water lines located outside the platted area will be provided for by separate documents after the Final Plat is recorded.
9. All tees, bends, plugs, valves and hydrants shall be provided with reaction blocking. Pre-cast blocks shall not be used.
10. After water mains have been laid and partially backfilled, they shall be subject to a hydrostatic pressure test of not less than 150 psi, in accordance with AWWA C605. The line shall be pressurized to test pressure and closed for two hours. At the end of the two-hour period, the line shall be repressurized and the volume of water required to restore pressure shall be measured. The maximum amount of water to restore pressure shall be 0.5 gallons per 1000 feet of tested main. Testing shall be done by Contractor in presence of Engineer.
11. Before connecting to City water mains and prior to wet tap, the new main shall be disinfected in accordance with AWWA C651. A 1 percent solution of chlorine shall be pumped into the water main, such that the water in the line will not have less than 25 mg/l of free chlorine. At the end of a 24 hour period, the water shall be tested to ensure that at least 10 mg/l of free chlorine. After satisfactory testing of chlorination, the main shall be flushed. Disinfection testing and flushing shall be done by Contractor in presence of Engineer.
12. After final flushing and before the pipeline is placed in service, two samples shall be collected and shall be tested for bacteriological quality in accordance with the State Department of Health or other regulatory agency. Satisfactory results for both samples is required for successful completion of bacteriological testing. Contractor shall conduct all testing and provide testing results to Engineer.
13. Sample Taps must be included in the new line, no less than two (2) feet no more than ten (10) feet from where the new water line connects to the existing lines at each end.
14. A representative of the city water deptartment must be present for:
    - i. Disinfecting
    - ii. Pressure Testing
    - iii. Bacteria Testing (a minimum of three required at perscribed locations to be determined by the water dept.)





LOCATION MAP

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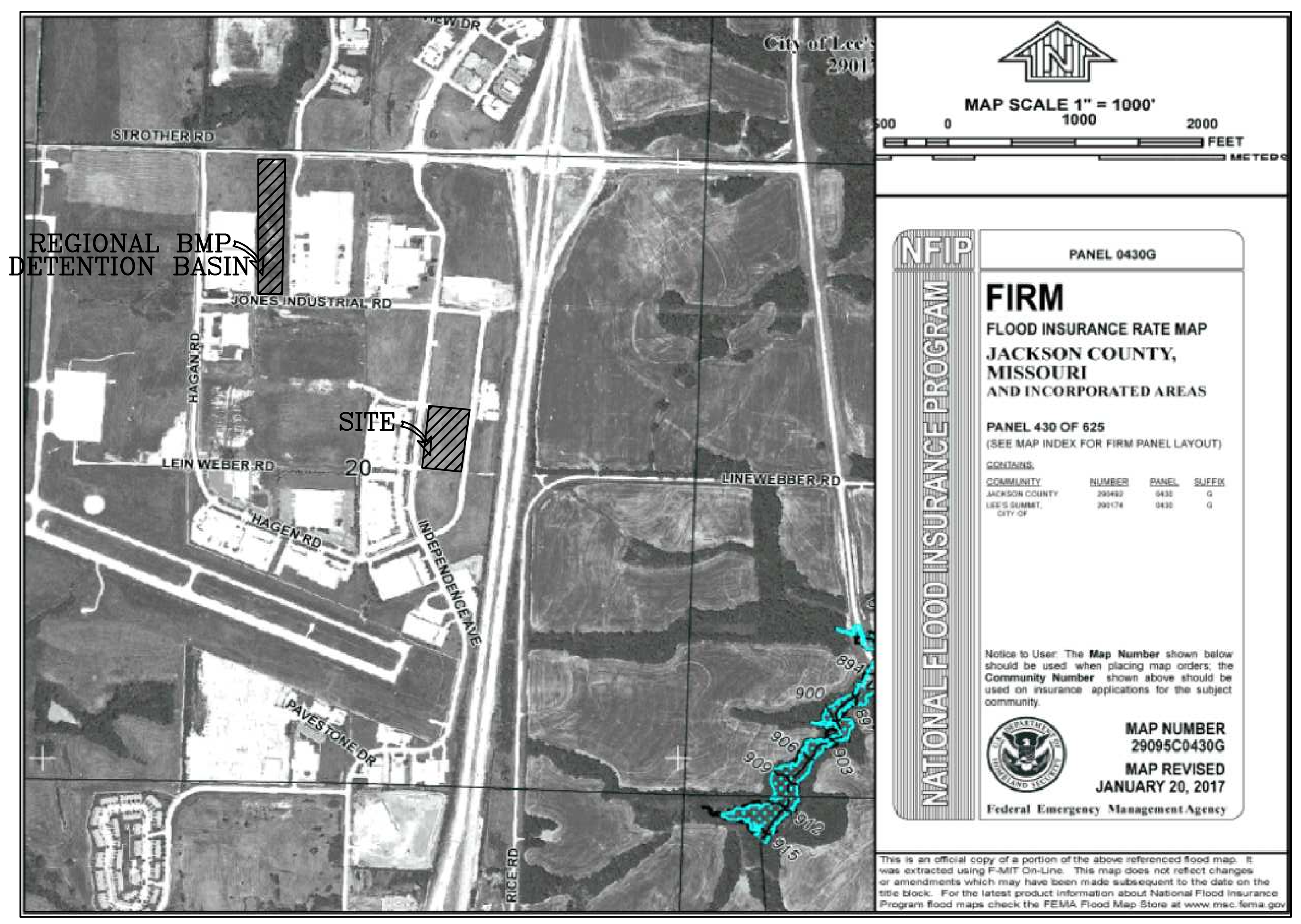

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DEVELOPER:

BLUE SPRINGS SAFETY STORAGE LLC
1120 NW EAGLE RIDGE BLVD.
GRAIN VALLEY, MISSOURI 64029
Ph.# 816-229-8115

SHEET INDEX

LEGAL DESCRIPTION:
I-470 BUSINESS AND TECHNOLOGY CENTER LOT 13A
A REPLAT OF LOTS 13, 14, 21, & 22 OF I-470 BUSINESS AND TECHNOLOGY CENTER A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

UTILITIES

LEE'S SUMMIT PUBLIC WORKS
220 SE GREEN STREET
LEE'S SUMMIT, MISSOURI 64063
(816) 969-1800

KANSAS CITY POWER & LIGHT CO.
P.O. BOX 219330
KANSAS CITY, MO 64121-9330
(816) 471-5275

MISSOURI ONE-CALL
1-800-344-7483

MO GAS ENERGY
P.O. BOX 219255
KANSAS CITY, MO 64141
(816) 756-5252

TELEPHONE COMAPANY
CENTURY LINK
P.O. BOX 2961
PHOENIX, AZ 85062
(800) 788-3600

BEFORE YOU
DIG – DRILL – BLAST

Call
1-800-344-7483 (MISSOURI)
1-800-344-7233 (KANSAS)

PROJECT CONTACTS: ROBERT WALQUIST, P.E.
821 NE COLUMBUS ST
LEE'S SUMMIT, MISSOURI 64063
Phone: (816) 550-5675

CIVIL PLANS COVER SHEET

STATE OF MISSOURI
ROBERT A. WALQUIST
NUMBER E-2001018825
REGISTERED PROFESSIONAL ENGINEER

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential & Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
Phone: (816) 550-5675
email: rwalquist@quistengineering.com

1ST ISSUE
6-20-19

REVISIONS

SHEET NO.
C100

JOB NO.
E18-337

30 15 0 30 60

Scale In Feet
1"= 30'

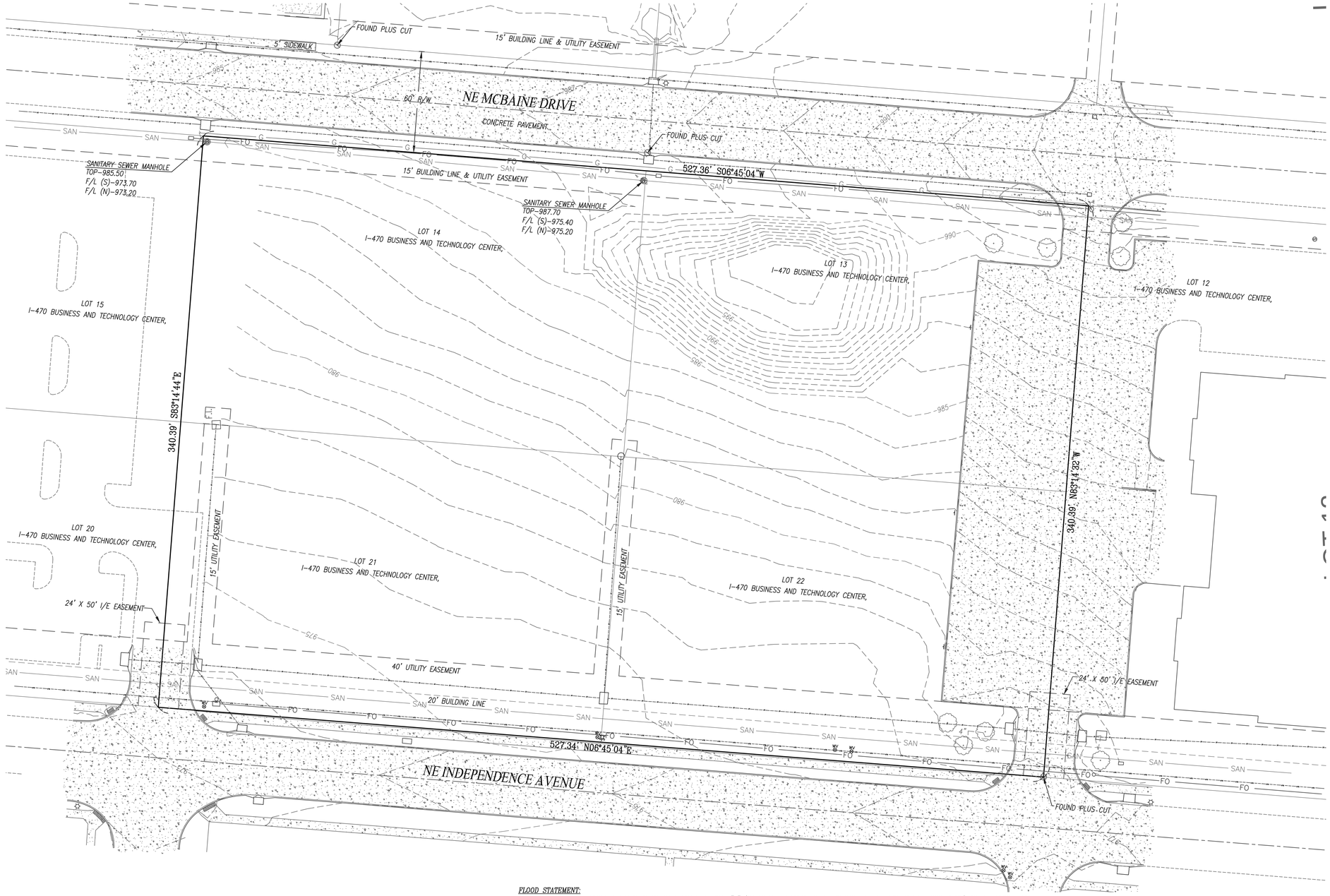
SYMBOL LEGEND

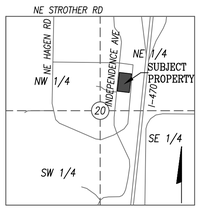
- SET 1/2" REBAR AND CAP RLS-2134, MO.
- FOUND MONUMENT (AS NOTED)
- R/W – RIGHT OF WAY
- GM – GAS METER
- WV – WATER VALVE
- FIRE HYDRANT
- GUY WIRE
- PP – POWER POLE
- SEWER MANHOLE
- FENCE
- G – GAS LINE
- SAN – SANITARY SEWER LINE
- STM – STORM SEWER LINE
- FO – UNDERGROUND FIBER OPTIC LINE
- W – WATER LINE
- OHE – OVERHEAD ELECTRIC LINE
- FO – UNDERGROUND FIBER OPTIC LINE

BEFORE YOU
DIG – DRILL – BLAST

Call
1-800-344-7483 (MISSOURI)
1-800-344-7233 (KANSAS)

UTILITY NOTE:
THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES FOR FIELD LOCATION OF ALL UNDERGROUND UTILITY LINES PRIOR TO ANY EXCAVATION AND FOR MAKING HIS OWN VERIFICATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.





LOCATION MAP
SCALE=1"=2000'
SECTION 20
TOWNSHIP 48 RANGE 31

NOTES:
1. THE SUBJECT PROPERTY CONTAINS 179,505 SQUARE FEET MORE OR LESS
2. ACCESS TO PROPERTY VIA PUBLIC RIGHT OF WAY, NE MCBAINE DRIVE AND NE INDEPENDENCE AVENUE.
3. UTILITY INFORMATION SHOWN HERON IS BASED UPON THE FOLLOWING:
   A. FIELD SURVEY METHODS FOR OBSERVABLE FACILITIES.
4. THERE ARE NO BUILDINGS ON SUBJECT PROPERTY.
5. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT SURVEYED OR CONSIDERED AS A PART OF THIS SURVEY. NO EVIDENCE OR STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONDITIONS THAT MAY AFFECT THE USE OR DEVELOPMENT OF THIS PROPERTY.

BASIS OF BEARING:
THE BASIS OF BEARING FOR THIS SURVEY IS GRID BEARINGS AS TAKEN FROM THE PLAT OF "I-470 BUSINESS AND TECHNOLOGY CENTER".

ENCROACHMENT:
THERE ARE NO ENCHROCHMENTS, EXCEPT AS SHOWN ON SURVEY.

ZONING REGULATIONS:
1. ACCORDING TO THE CITY OF LEE'S SUMMIT, MISSOURI THE SUBJECT PROPERTY IS ZONED PMIX (PLANNED MIXED USE DISTRICT)

FLOOD STATEMENT:
ALL OF THE SUBJECT PROPERTY LIES IN AN AREA LABELED ZONE "X" (AREAS DETERMINED TO BE OUTSIDE OF THE 500-YEAR FLOOD PLAIN) AS DETERMINED BY THE FEMA FLOOD INSURANCE RATE MAP NUMBER 29095C0430G WITH AN EFFECTIVE DATE OF JANUARY 20, 2017.

SURVEY REFERENCE:
NOTE: NO TITLE REPORT WAS PROVIDED BY THE CLIENT. BOUNDARY & CONSTRUCTION SURVEYING, INC. ASSUMES NO RESPONSIBILITY FOR EASEMENTS NOT SHOWN.

DESCRIPTION:
ALL OF LOTS 13, 14, 21, 22, I-470 BUSINESS AND TECHNOLOGY CENTER,
A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI.

CERTIFICATION:
I HEREBY DECLARE THAT AN ACTUAL PROPERTY BOUNDARY RE-SURVEY WAS MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT SURVEY MEETS OR EXCEEDS THE CURRENT MINIMUM STANDARDS FOR PROPERTY BOUNDARY SURVEYS TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION AND BELIEF.

ROGER A. BACKUES, PLS
LAND SURVEYOR REG. NO. PLS-2134

DATE: DECEMBER 27, 2018

CERTIFICATE OF SURVEY

LOTS 13, 14, 21, & 22
I-470 BUSINESS AND TECHNOLOGY CENTER
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DATE: DECEMBER 27, 2018

CLIENT:

QUIST ENGINEERING
821 NE COLUMBUS ST.
LEE'S SUMMIT, MISSOURI 64063

BOUNDARY & CONSTRUCTION SURVEYING, INC.
821 NE COLUMBUS STREET SUITE 100, LEE'S SUMMIT, MO. 64063
PH.# 816/554-9798, FAX # 816/554-0337

PROJECT NO. 18-329 | SHEET 1 OF 1

I-470 BUSINESS AND TECHNOLOGY CENTER, LEE'S SUMMIT, MO.

FINAL DEVELOPMENT PLAN

I–470 BUSINESS AND TECHNOLOGY CENTER LOT 13A

A REPLAT OF LOTS 13, 14, 21, & 22 OF
I–470 BUSINESS AND TECHNOLOGY CENTER
SECTION 20, TOWNSHIP 48, RANGE 31
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

DEVELOPER:

BLUE SPRINGS SAFETY STORAGE LLC
1120 NW EAGLE RIDGE BLVD.
GRAIN VALLEY, MISSOURI 64029
Ph.# 816–229–8115

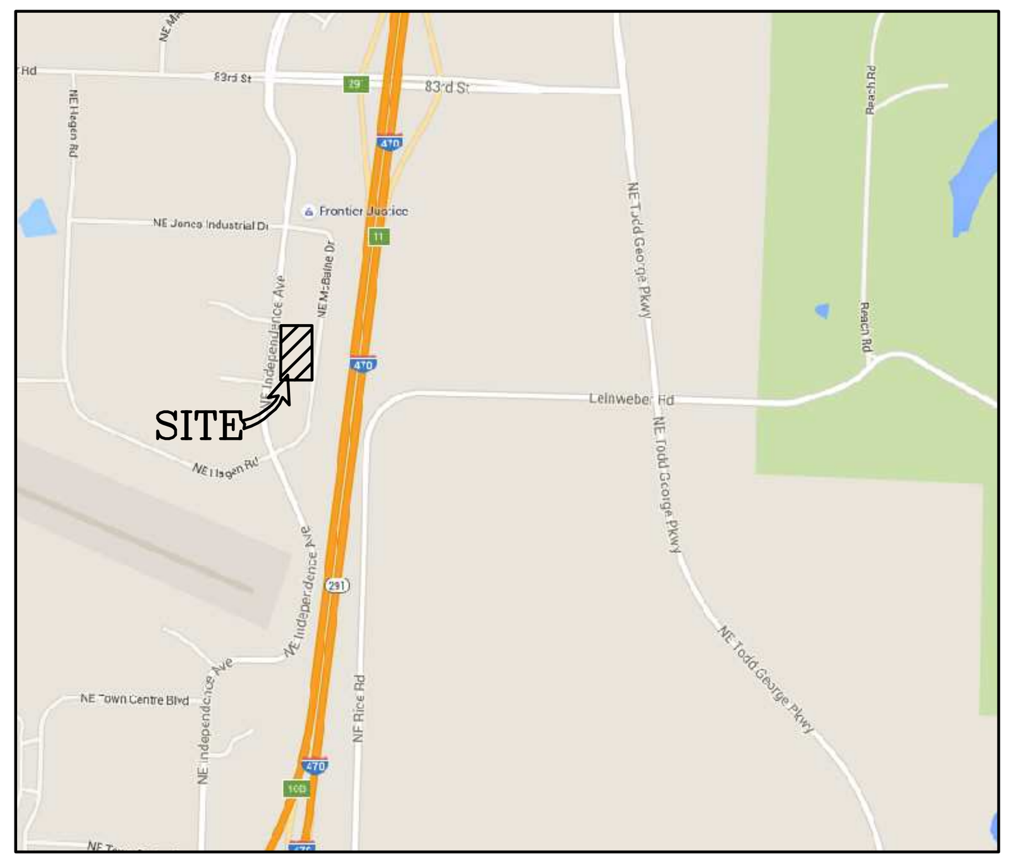
LEGAL DESCRIPTION:
I-470 BUSINESS AND TECHNOLOGY CENTER LOT 13A
A REPLAT OF LOTS 13, 14, 21, & 22 OF I-470 BUSINESS AND TECHNOLOGY CENTER A SUBDIVISION IN LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

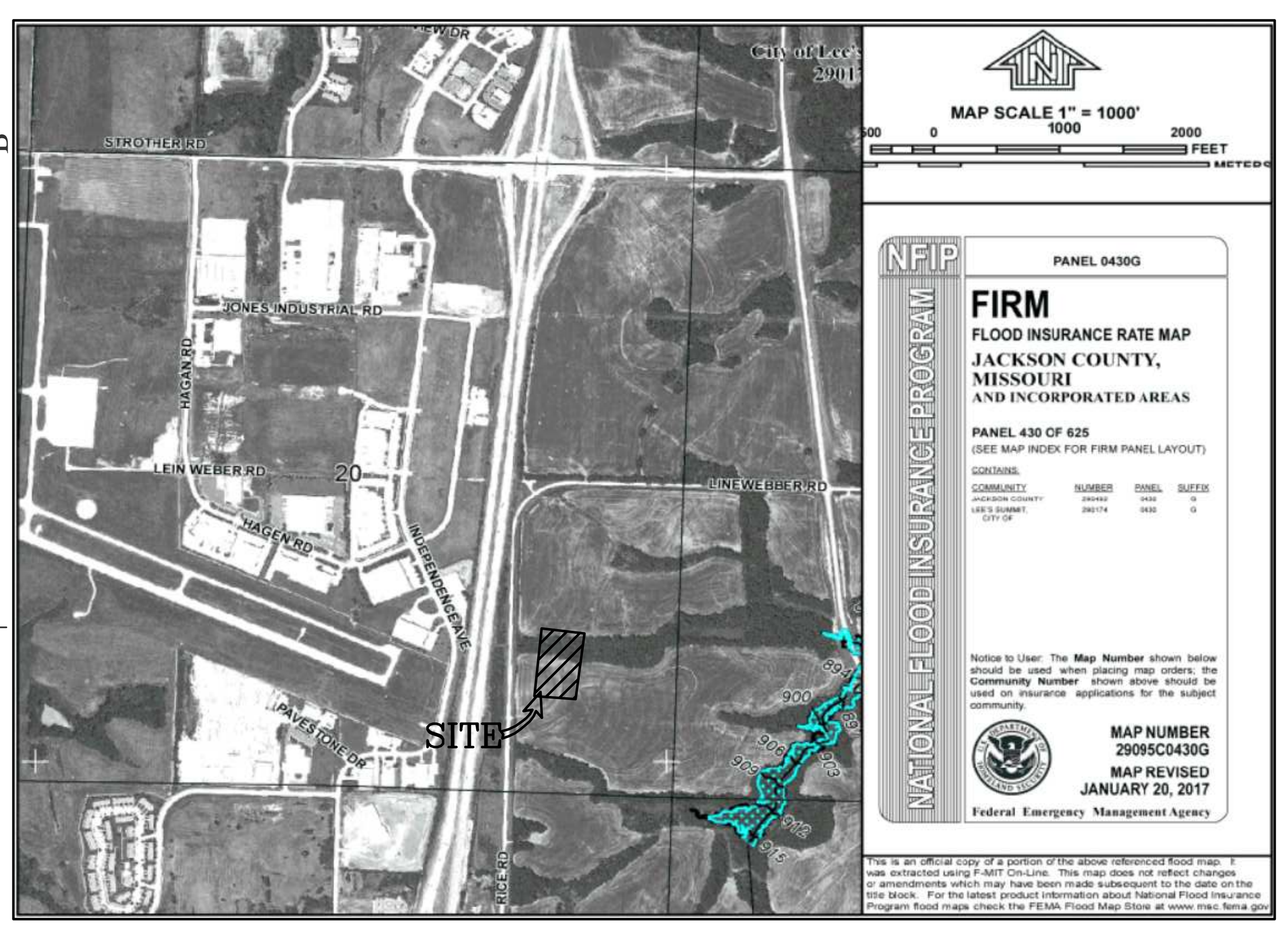
LINE LEGEND

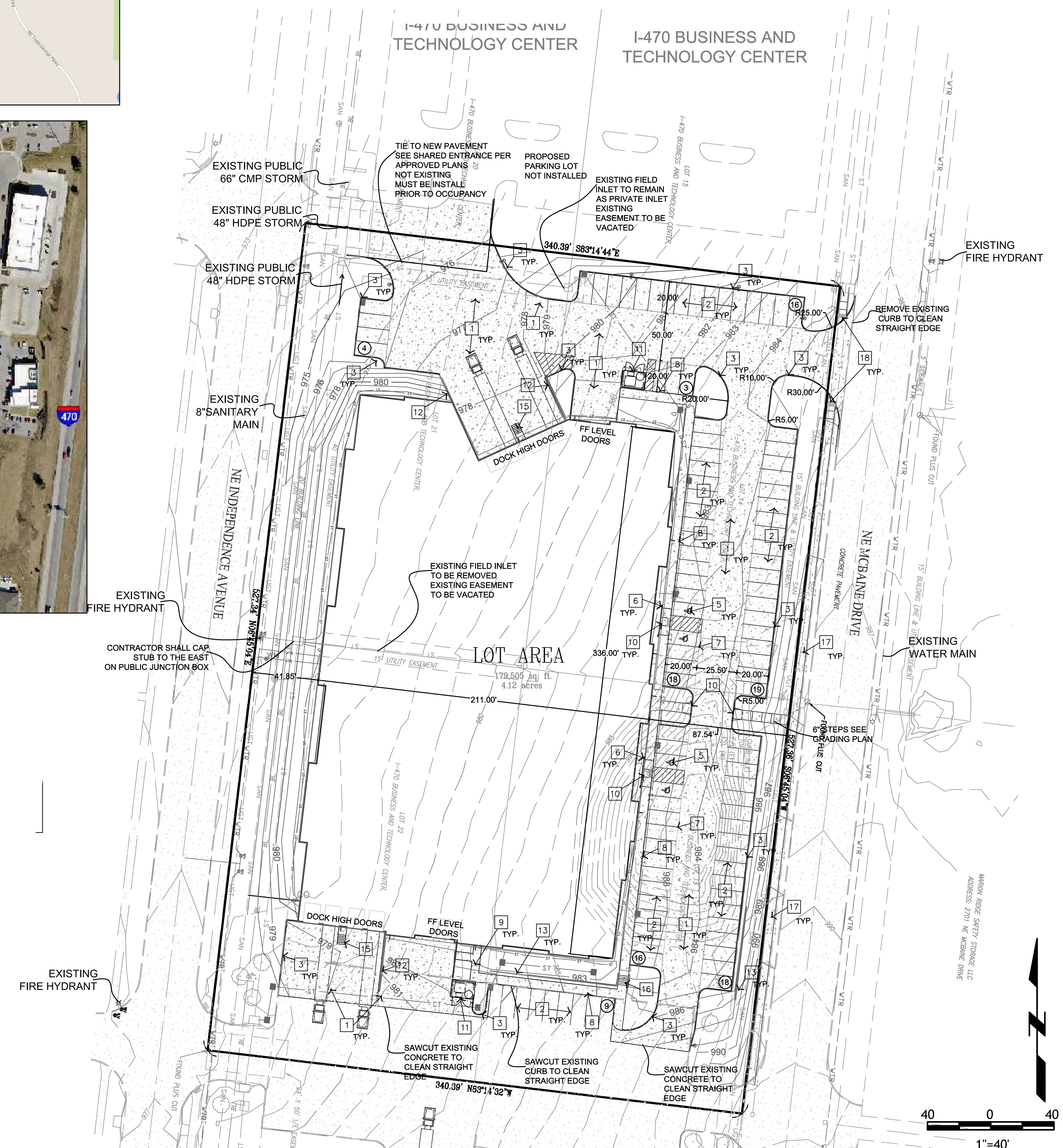
PROPOSED		EXISTING
ST	Storm Line	ST
SAN	Sanitary Line	SAN
WTR	Water Line	WTR
25'BL	Building Line	BL
	Easement Line	
	4' Sidewalk	
	2' Curb	
840	Contour	840
	Tree Line	
X	Fence Line	X
G	Gas Line	G
	Overhead Telephone Line	OHT
	Undergroung Telephone Line	UGT
	Overhead Electrical Line	OHE
	Underground Electrical Line	UGE

SYMBOL LEGEND

PROPOSED		EXISTING
MH	Manhole	MH
C.I.	Curb Inlet	C.I.
JB	Junction Box	JB
FI	Field Inlet	FI
FES	Flared End Section	FES
FH	Fire Hydrant	
BO	Blow Off	
WV	Water Valve	
WM	Water Meter	WM
	Straddle	
	Utility Pole	
	Guy Wire	
	Electric Transformer	ELEC TRANS
	Telephone Pedestal	TEL PED
	Cable Pedestal	CBL PED
CO	Clean Out	CO







PLAN NOTES:

1. HEAVY CONCRETE PAVEMENT RE: SEE SHEET C210
2. LIGHT CONCRETE PAVEMENT RE: SEE SHEET C210
3. STRAIGHT BACK CURB RE: SEE SHEET C210
4. ACCESSIBILITY RAMP RE: SEE SHEET C210
5. PAINT ACCESSIBLE PARKING SYMBOLS ACCORDING TO APWA PAVEMENT MARKING STANDARDS. RE: SEE SHEET C210
6. INSTALL ACCESSIBLE PARKING SIGN "TYPE B" RE: SEE SHEET C210
7. STRIPE PAVING WITH 4" WIDE STRIPE & PAINT ACCORDING TO APWA PAVEMENT MARKING STANDARDS.
8. CURB WALK RE: SEE SHEET C210
9. SITE SIDEWALK RE: SEE SHEET C210
10. SITE ADA RAMP RE: SEE SHEET C210
11. TRASH ENCLOSURE RE: SEE ARCHITECTURAL PLANS
12. CONCRETE RETAINING WALL RE: SEE STRUCTURAL PLANS W/ HAND RAIL
13. MODULAR RETAINING WALL RE: SEE SHEET C210
14. SITE MONUMENT SIGN RE: SEE ARCHITECTURAL PLANS
15. METAL DOCK STAIRS RE: SEE ARCHITECTURAL PLANS
16. SITE STAIRS RE: SEE ARCHITECTURAL PLANS
17. 5' CITY SIDWALK RE: SEE CITY DETAILS
18. CITY ADA RAMP RE: SEE CITY DETAILS

GENERAL NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
2. PERFORM TEMPORARY EROSION CONTROL MEASURES IN ACCORDANCE WITH ALL STATE & LOCAL REQUIREMENTS. TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT IMPROVEMENTS ARE IN PLACE.
3. ALL PARKING STALLS SHALL BE MARKED W/ A 4" WIDE STRIPE. PARKING STRIPES TO BE PAINTED ACCORDING TO SPECIFICATIONS.
4. CONSTRUCT ALL SIDEWALKS WITH 2% MAX. CROSS SLOPE AWAY FROM BUILDING UNLESS OTHERWISE SHOWN ON PLANS.
5. PLACE EXPANSION JOINTS, IN SIDEWALKS AT 50' MAX. SPACING, AT ALL DIRECTION CHANGES AND WHEN ADJACENT TO BUILDINGS.
6. ALL DIMENSIONS ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
7. LAYOUT ALL SIDEWALKS AND PAVEMENT APPROX. TO LINES SHOWN. FINAL APPROVAL BY ARCHITECT PRIOR TO COMMENCEMENT

STATE OF MISSOURI — ROBERT A. WALQUIST — NUMBER E-2001018825 — REGISTERED PROFESSIONAL ENGINEER — 6/20/19

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential & Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
Phone: (816) 550-5675
email: rwalquist@quistengineering.com

PROJECT CONTACTS: ROBERT WALQUIST, P.E..
821 NE COLUMBUS ST
LEE'S SUMMIT, MISSOURI 64063
Phone: (816) 550-5675

FINAL DEVELOPMENT PLAN

1ST ISSUE: 6-20-19

REVISIONS

SHEET NO. C200

JOB NO. E18-337

LANDSCAPING PLAN

Section 14.070. Installation of plant materials

Plant materials, as required by the provisions of this Article, shall be installed by the date specified on the approved landscaping and buffer plan. The Director may allow one (1) planting season in a twelve (12)-month period in which the installation of plant materials shall be completed.

Buffers, if required, shall be installed before a certificate of occupancy permit is granted; except where the weather is not suitable for planting and escrow provisions are made in accordance with guidelines of the Department.

Section 14.080. Maintenance of required plant materials

A. The owner, tenant and their agent, if any, shall be jointly responsible for the maintenance in good condition of the plant materials used to meet the minimum requirements of this Article for landscaping, buffer or tree replanting. The plant materials shall be kept free from refuse and debris.

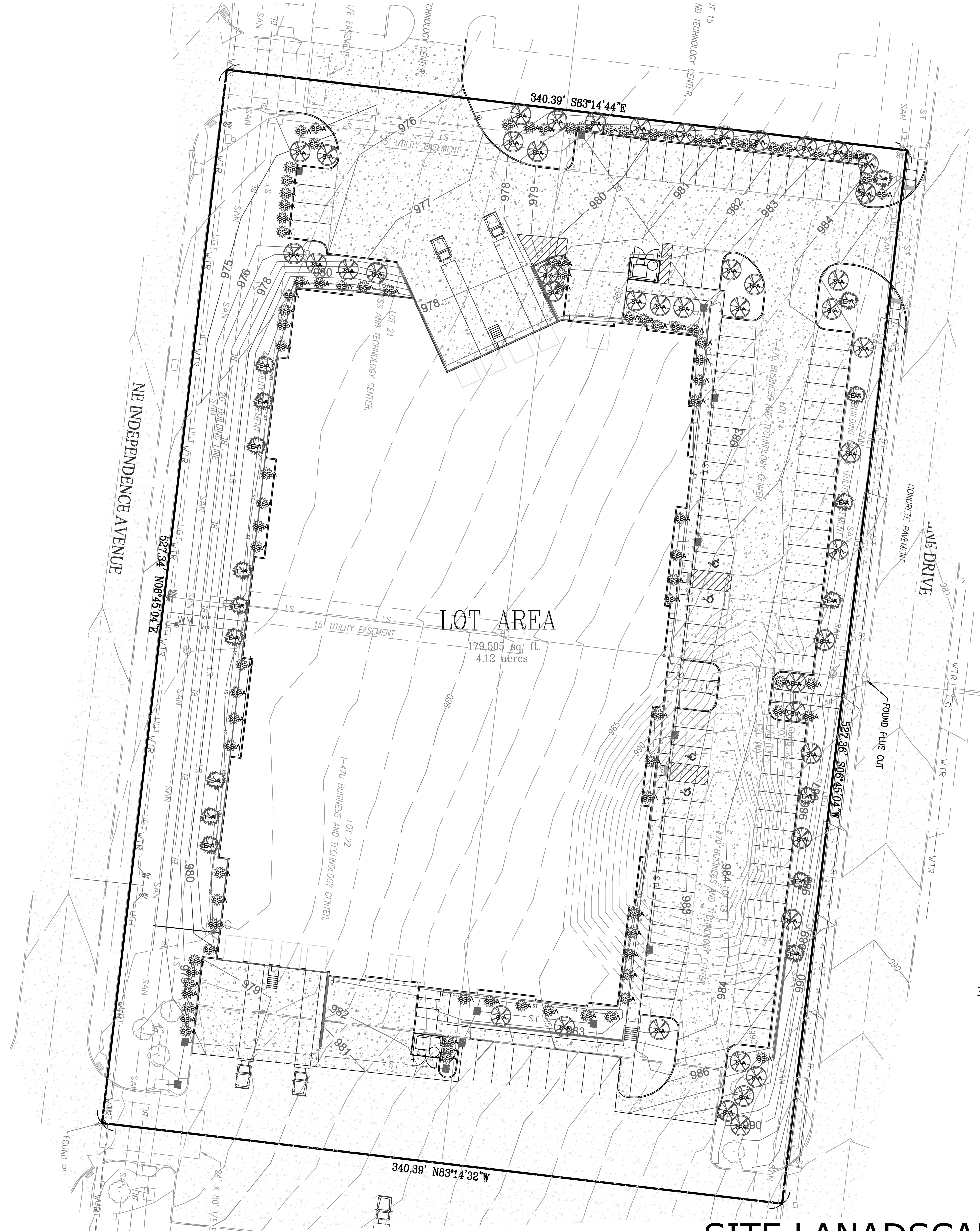
B. Plants that are not in sound growing condition or are dead shall be removed and replaced with a plant of a species or variety as determined by the Director.

C. Other landscape materials shall be maintained in proper repair and shall be kept clear of refuse and debris.

1. UDC SECTION 14. LANDSCAPING, BUFFERS AND TREE PROTECTION PLAN REQUIREMENTS
   A. TREE PROTECTION: THIS SITE HAS NO TREES TO BE REMOVED.
   B. BUFFERS: WE HAVE SHOWN A 20' LANDSCAPING BUFFER ON ALL STREET FRONTAGE.
   C. STREET TREES & SHRUBS: THIS SITE HAS A TOTAL OF 1,054 L.F. OF ROW FRONTAGE
      1. REQUIRED TREES 1,054 / 30 = 35
      2. REQUIED SHRUBS 1,054 / 20 = 53
   D. OPEN YARD AREA: (TOTAL REMAINING YARD AFTER FULL DEVLOPMENT = 57,442sf) (TOTAL LOT AREA = 179,505sf)
      1. REQUIRED 1 TREES PER 5,000sf OF REMAINING YARD = 11
      2. REQUIRED 2 SHRUBS PER 5,000sf OF REMAINING YARD = 58
   TOTAL LANDSCAPING REQUIRED
   TREES = 46
   SHRUBS = 111
   E. PROPOSED TREES & SHRUBS:
      1. TREES ALONG THE ROW FRONTAGE = 18
      2. SHRUBS ALONG THE ROW FRONTAGE = 54
      3 OTHER PROPOSED TREES =28
      4. OTHER PROPOSED SHRUBS =57

   TOTAL TREES = 46
   TOTAL SHRUBS =111

S-A		STATE STREET MAPLE	ACER MIYABEI	3" CAL.	46
S-B		PACIFIC SUNSET MAPLE	ACER TRUNCATUM 'PACIFICSUNSET'	3" CAL.	0
S-C		AUTUMN BLAZE MAPLE	ACER X 'AUTUMN BLAZE'	3" CAL.	0
S-D		SHAWNEE BRAVE BALD CYPRESS	TAXODIUM DISTICHUM 'SHAWNEE BRAVE	3" CAL.	0
S-E		VALLEY FORGE ELM	ULMUS AMERICANA 'VALLEY FORGE'	3" CAL.	0
S-F		SWAMP WHITE OAK	QUERCUS BICOLOR	3" CAL.	0
					TOTAL PROPOSED =46 TOTAL REQUIRED = 46
ORNAMENTAL TREES					
O-A		ROYAL RAINDROPS CRABAPPLE	MALUS 'ROYAL RAINDROPS'	1.5" CAL.	0
O-B		HOT WINGS MAPLE	ACER TATARICUM 'HOT WINGS'	1.5" CAL.	0
O-C		IVORY SILK TREE LILAC	SYRINGA RETICULATA 'IVORY SILK'	1.5" CAL.	0
O-D		REDBUD	CERCIS CANADENSIS	1.5" CAL.	0
O-E		JUNE SNOW DOGWOOD	CORNUS CONTROVERSA 'JUNE SNOW'	1.5" CAL.	0
O-F		SPRING FLURRY SERVICEBERRY	AMELNCHIER LAEVIS 'SPRING FLURRY'	1.5" CAL.	0
					TOTAL PROPOSED = 0 TOTAL REQUIRED = 0
EVERGREEN TREES/ SHRUB					
E-A		NORWAY SPRUCE	PICEA ABIES	6' HT.	17
E-B		CANAERTI JUNIPER	JUNIPERUS VIRGINIANA 'CANAERTI'	6' HT.	0
E-C		GREEN GIANT ARBORVIATAE	THUJA PLICATA 'GREEN GIANT'	6' HT.	0
TRUE SHRUBS					
SS-A		BOX WOOD	BUXUS SEMPERVERENS	3GAL	94
					TOTAL PROPOSED = 111 TOTAL REQUIRED = 111



SITE LANADSCAPING PLAN

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential & Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
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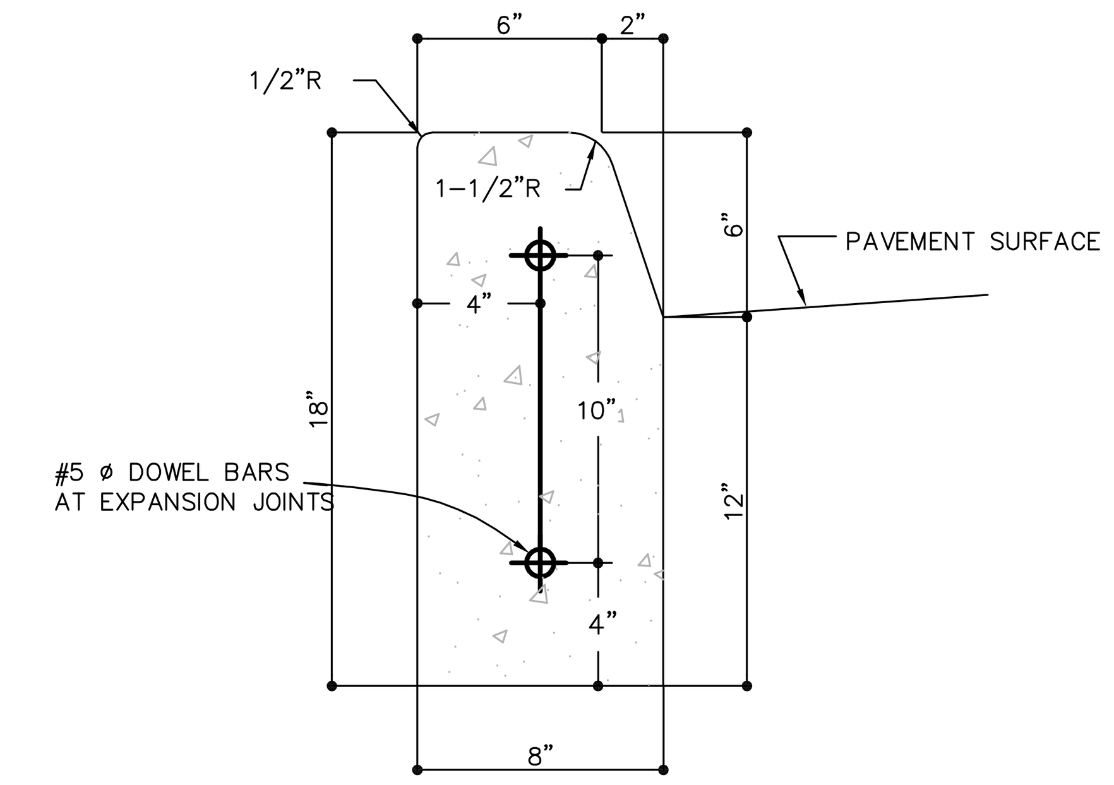
1ST ISSUE
6-20-19

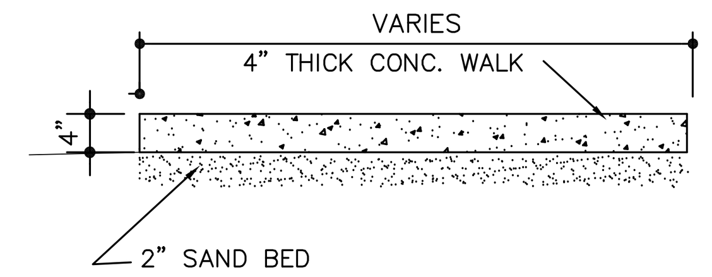
REVISIONS

SHEET NO.
C201

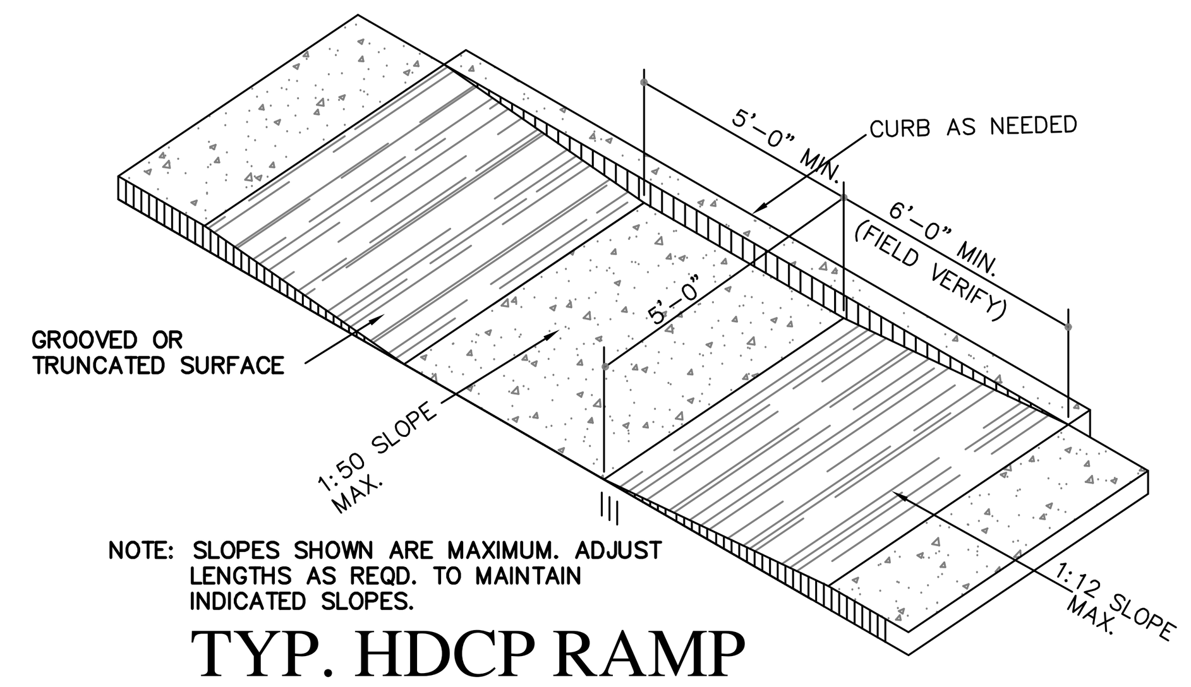
JOB NO.
E18-337



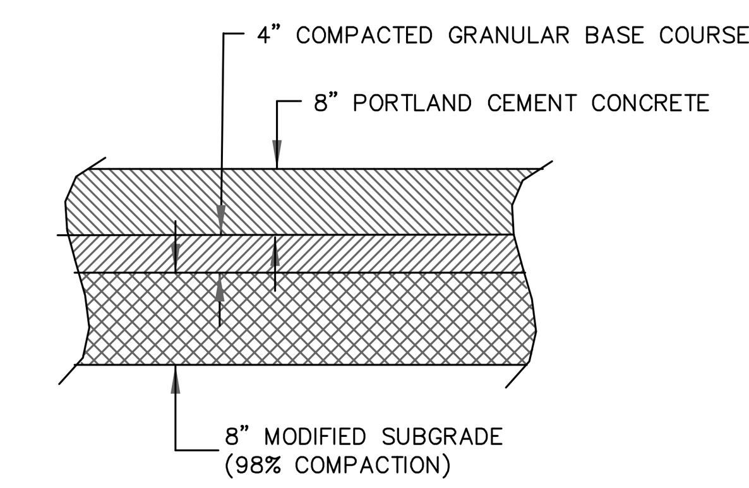
CONCRETE CURB
NTS.



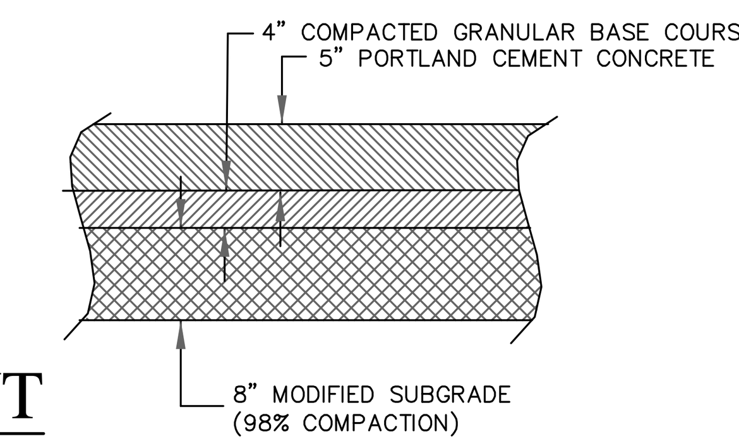
TYPICAL SIDEWALK
SCALE: 1/2" = 1'-0"



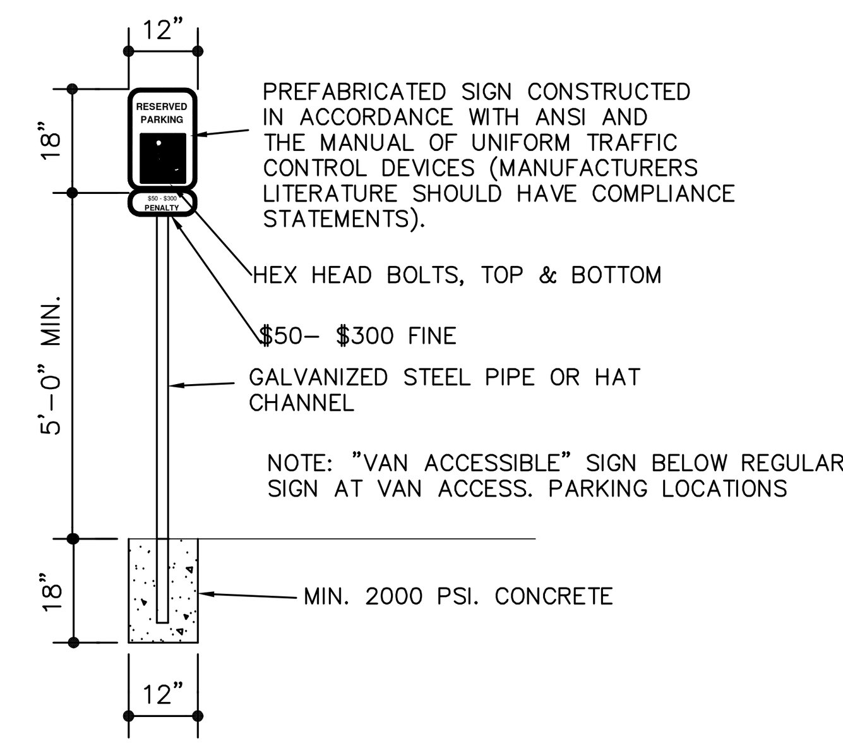
TYP. HDCP RAMP
SCALE: 1/4"= 1'-0"



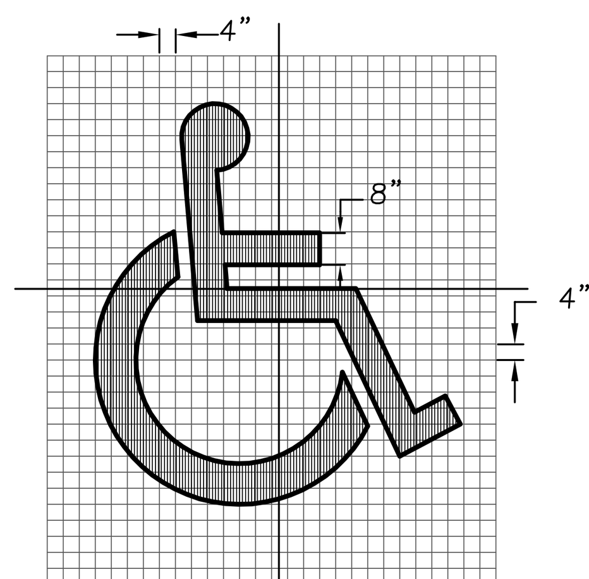
HEAVY CONCRETE PAVEMENT
SCALE: NO SCALE
NOTE:
PAVEMENT DESIGN FROM THE SOIL REPORT MAY BE USED WITH CLIENT OR ARCHITECTS APPROVAL



LIGHT CONCRETE PAVEMENT
SCALE: NO SCALE
NOTE:
PAVEMENT DESIGN FROM THE SOIL REPORT MAY BE USED WITH CLIENT OR ARCHITECTS APPROVAL

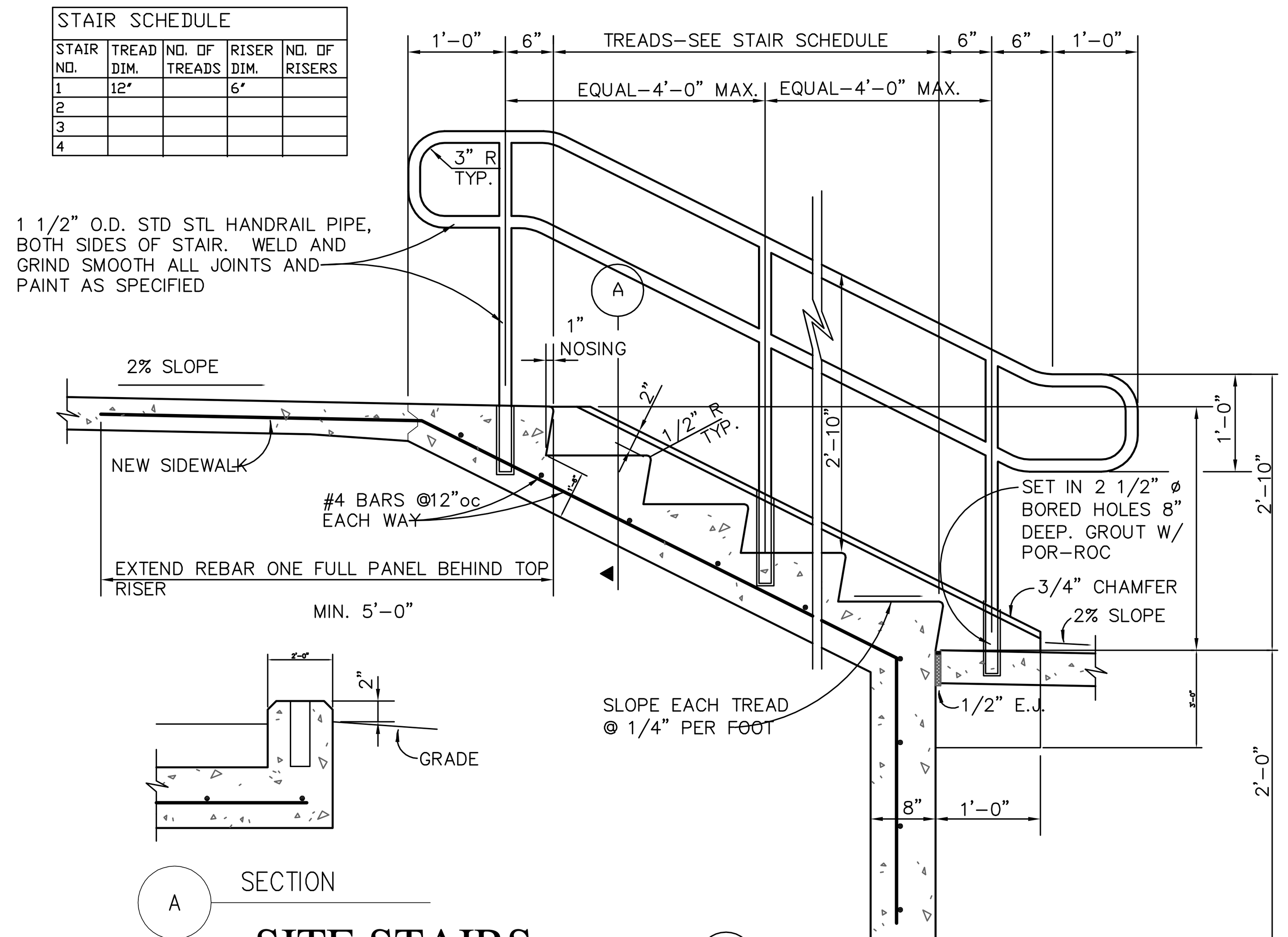


HDCP PARKING SIGN
SCALE: 3/8" = 1'-0"

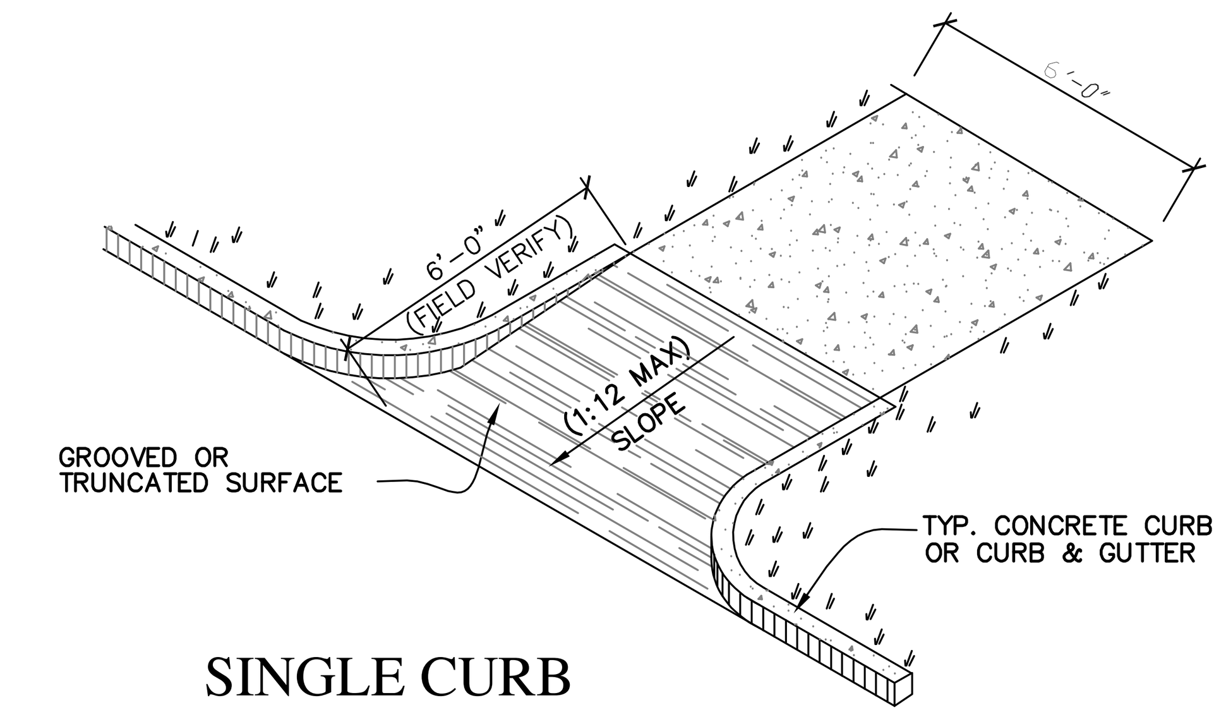


HANDICAP PARKING DETAIL
NTS.

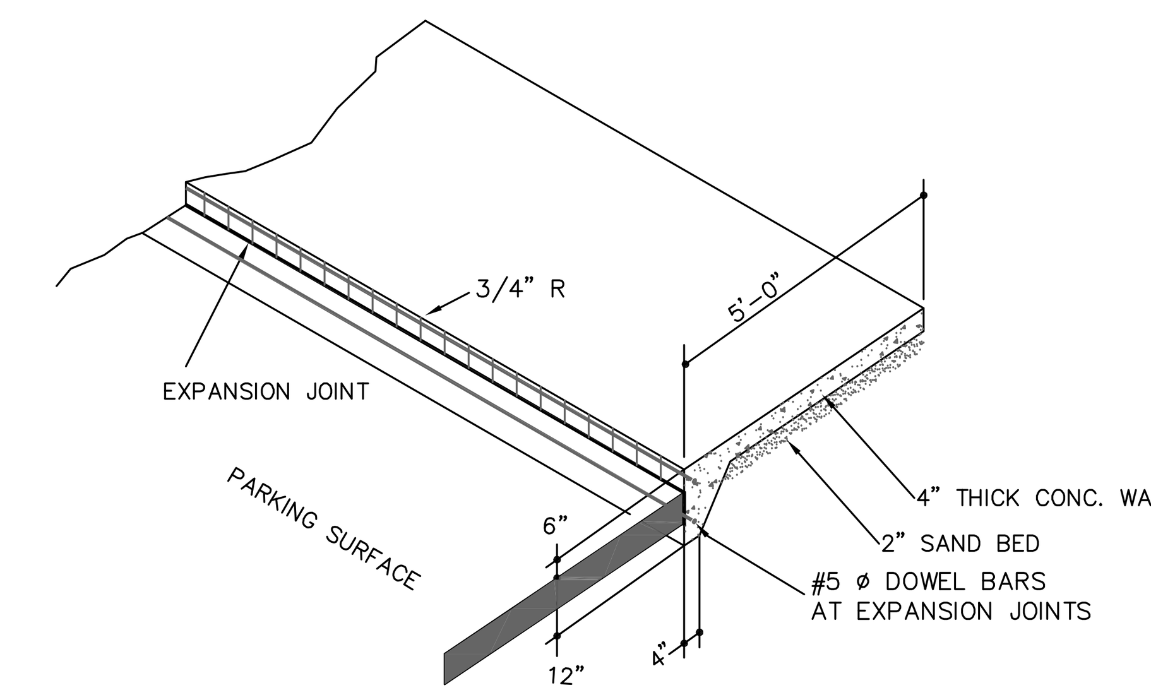
STAIR SCHEDULE				
STAIR NO.	TREAD DIM.	NO. OF TREADS	RISER DIM.	NO. OF RISERS
1	12"		6"	
2				
3				
4				



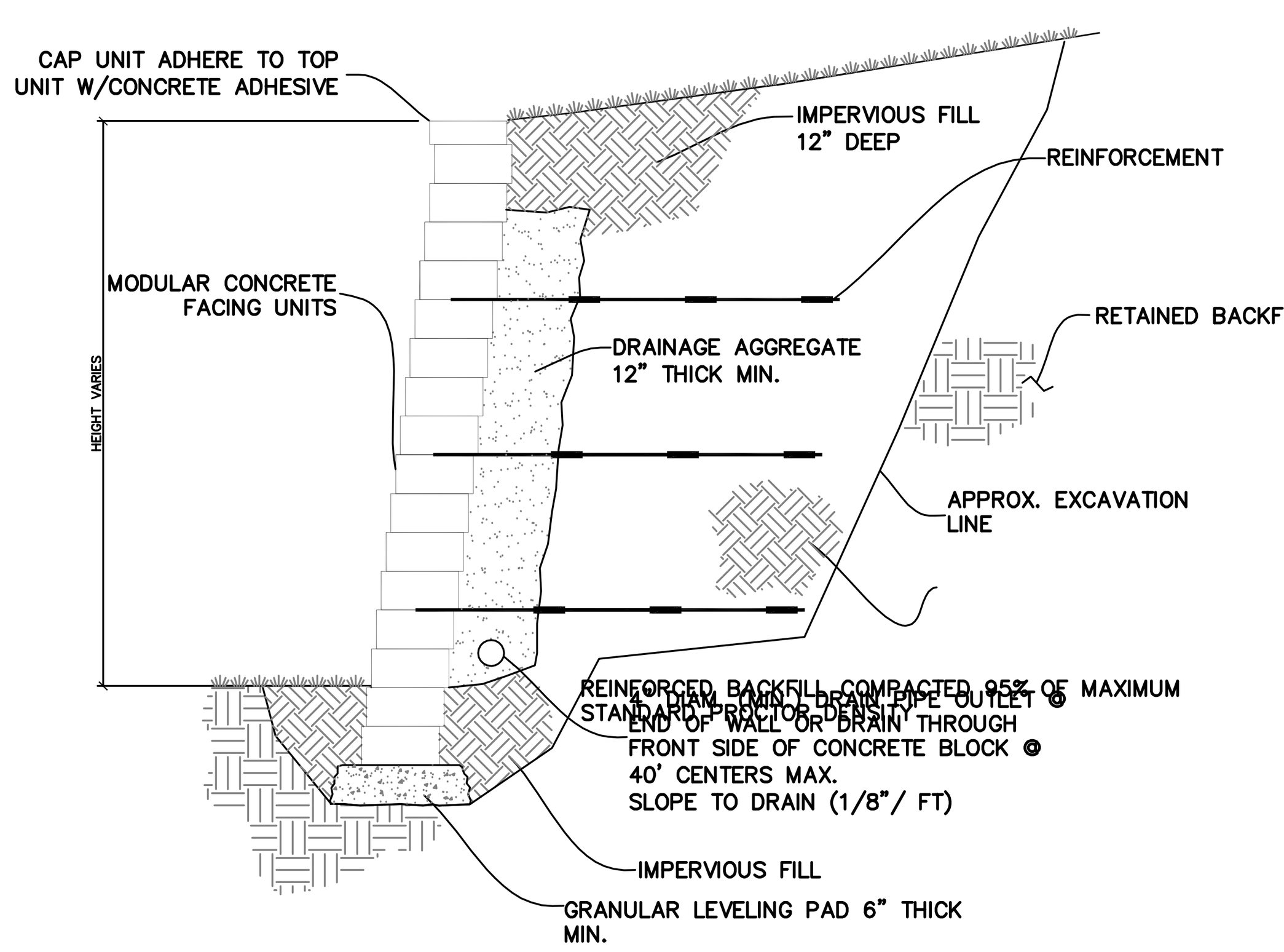
SITE STAIRS
16



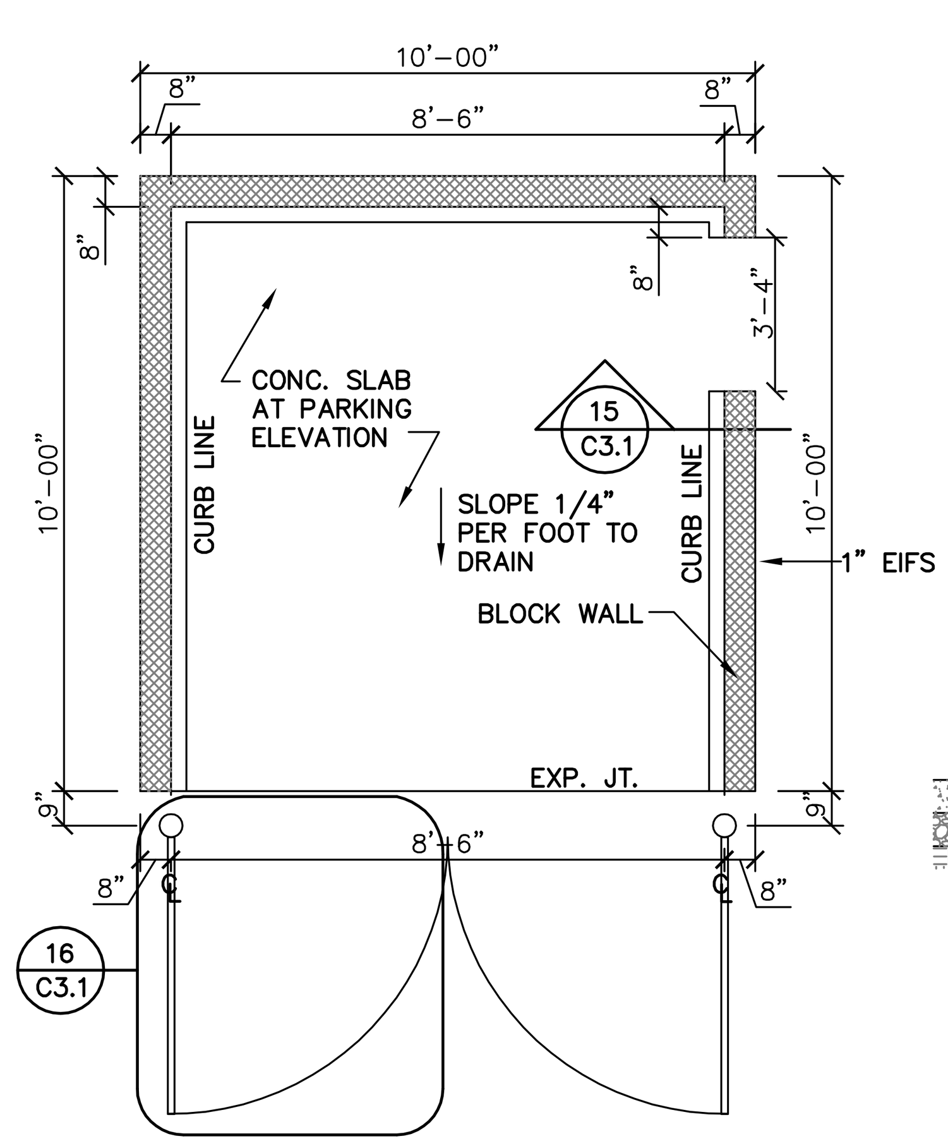
SINGLE CURB ACCESS RAMP
(SCHEMATIC) 1/4"=1'-0"



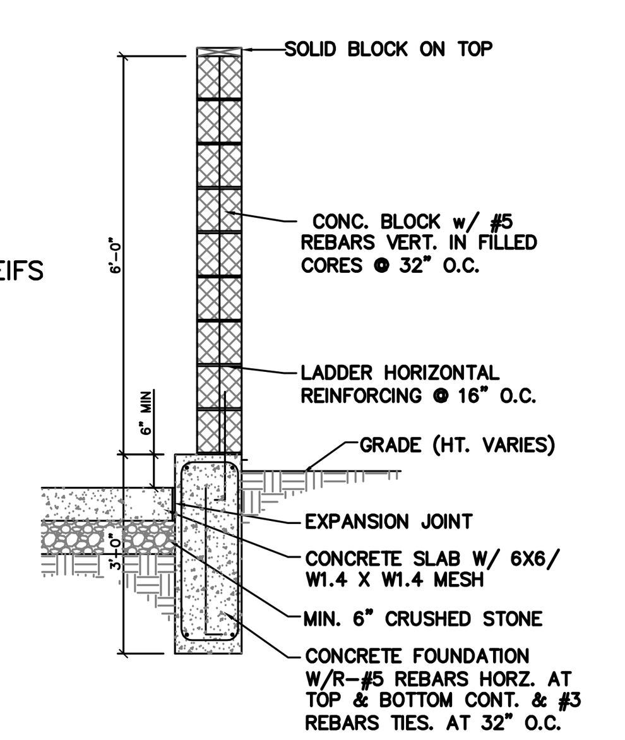
CURB WALK
SCALE: 1/2" = 1'-0"



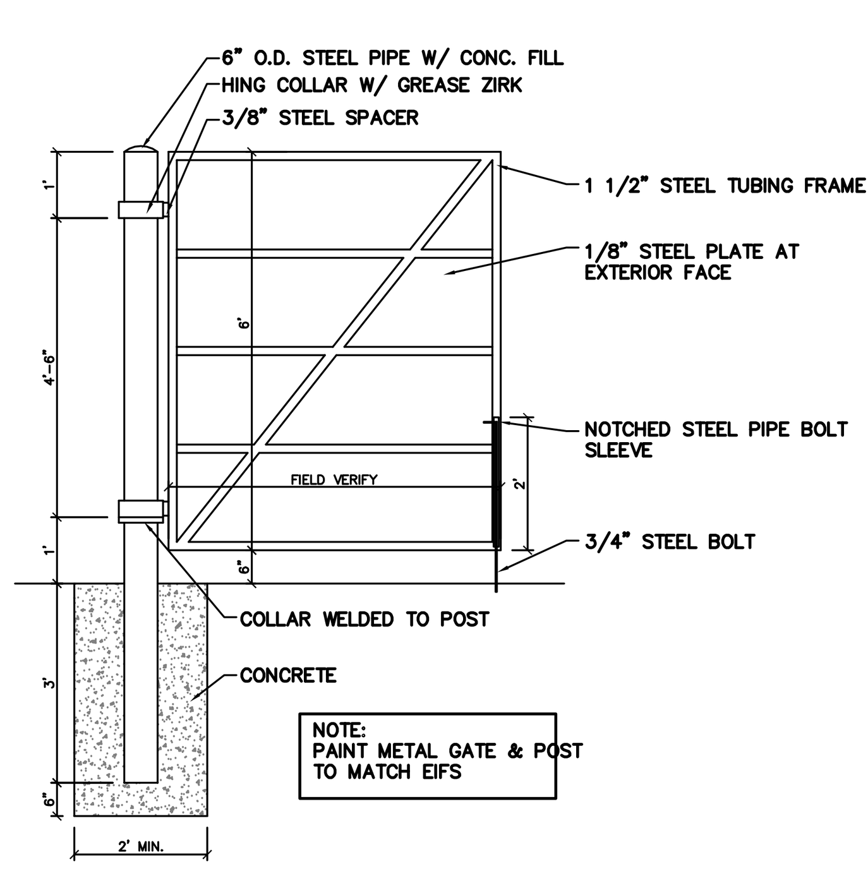
TYP. SECTION-REINFORCED RETAINING WALL
NTS



DUMPSTER ENCLOSURE DETAIL
NO SCALE



SECTION 15
SCALE: 1/2" = 1'-0"



GATE DETAIL 16
SCALE: 1/2" = 1'-0"

SITE NOTES

1. The Contractor shall strip the building area of top soil and stockpile it. He shall then install fill dirt as per soils report included within the specifications.
2. The bottoms of footings shall bear on soils as per soils report included within the specifications. The footings shall be at depths indicated on plans, or deeper as required due to specific site conditions.
3. Topsoil finish grade shall be 8" below the finish floor elevations, sloping away 6" in 10' minimum. Finish grades shall not exceed a 2:1 slope.
4. Finish grade shall be 2" below the surface of walks, slabs, steps, etc., except where necessary to accommodate drainage. Contractor shall seed all areas of site disturbed by construction.
5. Sidewalks shall not exceed 5 % (1'-0" in 20'-0") slope with a 2% (1'-0" in 50'-0") cross-slope and shall be 5' wide except as noted on Site Plan. Provide stairs, ramps, curbs, etc., as noted and detailed.
6. The Contractor shall obtain and pay for building permit's) as may be required.
7. The Contractor shall furnish and install one mailboxes as post office requires.
8. Parking areas @ handicap accessible spaces and access isles shall not exceed a 2% slope (1'-0" in 50'-0" slope in any direction. Other portions of the accessible routes shall not exceed a 5 % (1'-0" in 20'-0") longitudinal slope and a 2% (1'-0" in 50'-0") cross-slope. Other parking areas and cross-slopes of drives shall not exceed a 5 % (1'-0" in 20'-0") slope.

SITE DETAILS

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

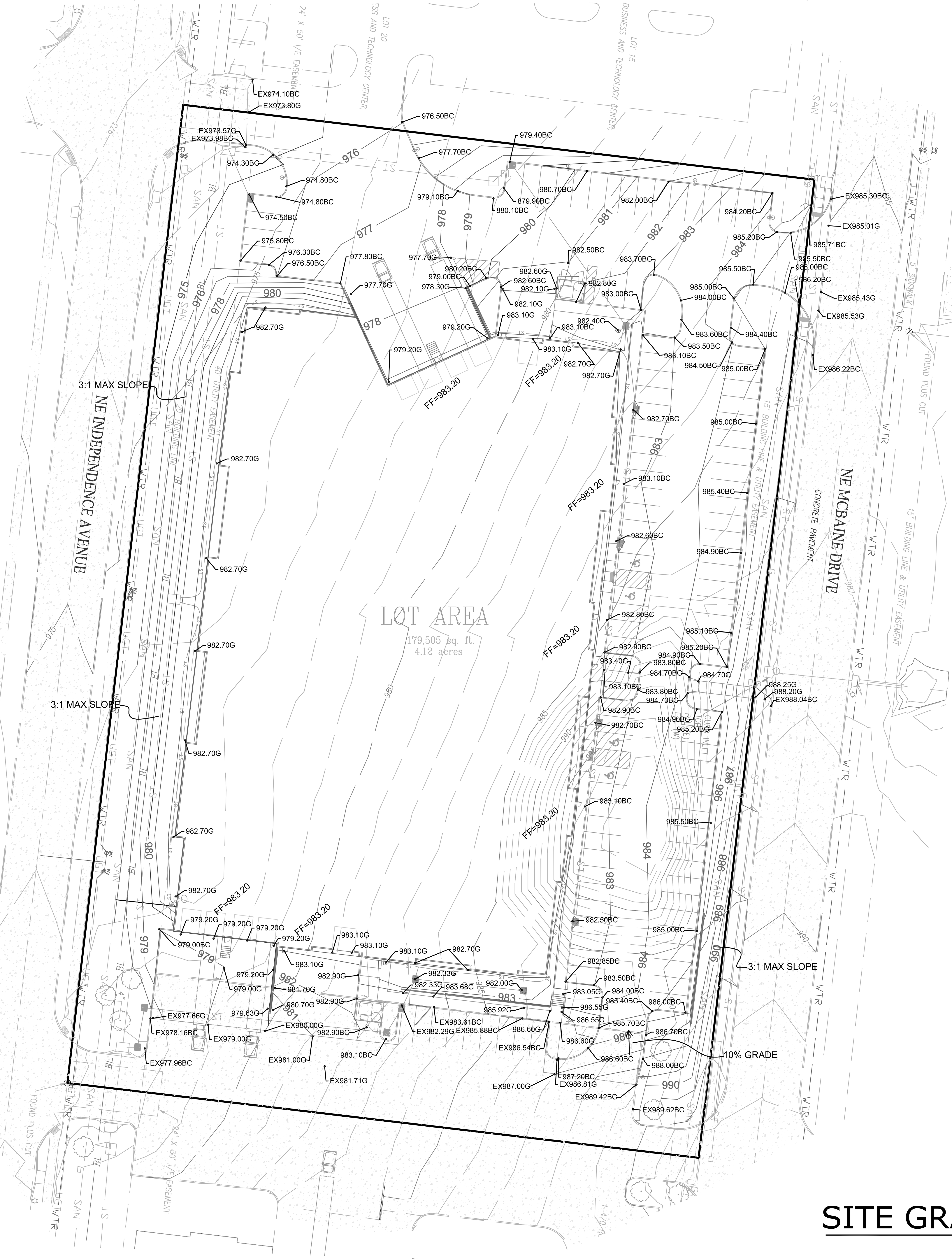
Quist Engineering, Inc
Civil Engineering for Residential & Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
Phone: (816) 550-5675
email: rwalquist@quistengineering.com

1ST ISSUE
6-20-19

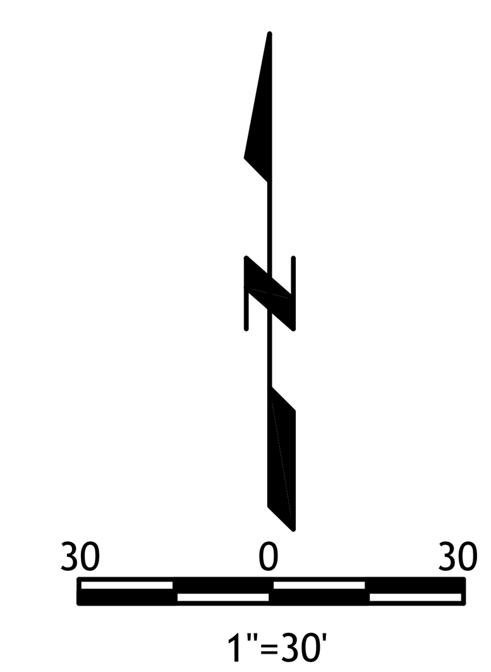
REVISIONS

SHEET NO.
C210

JOB NO.
E18-337



GRADING NOTES:
1. TOTAL CUT = 7,414cyd
2. TOTAL FILL = 11,683cyd
3 TOTAL BUILDING FOOTING CUT = 2,565cyd
4. TOTAL PARKING LOT AND DRIVE PAVEMENT SIDEWALK, CURB CUT =1,325cyd
6. TOTAL OF FILL= 379cyd
7. THESE NUMBERS ARE FOR CLIENT USE NOT MEANT TO BE USED FOR FINAL BIDS



SITE GRADING PLAN

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential & Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
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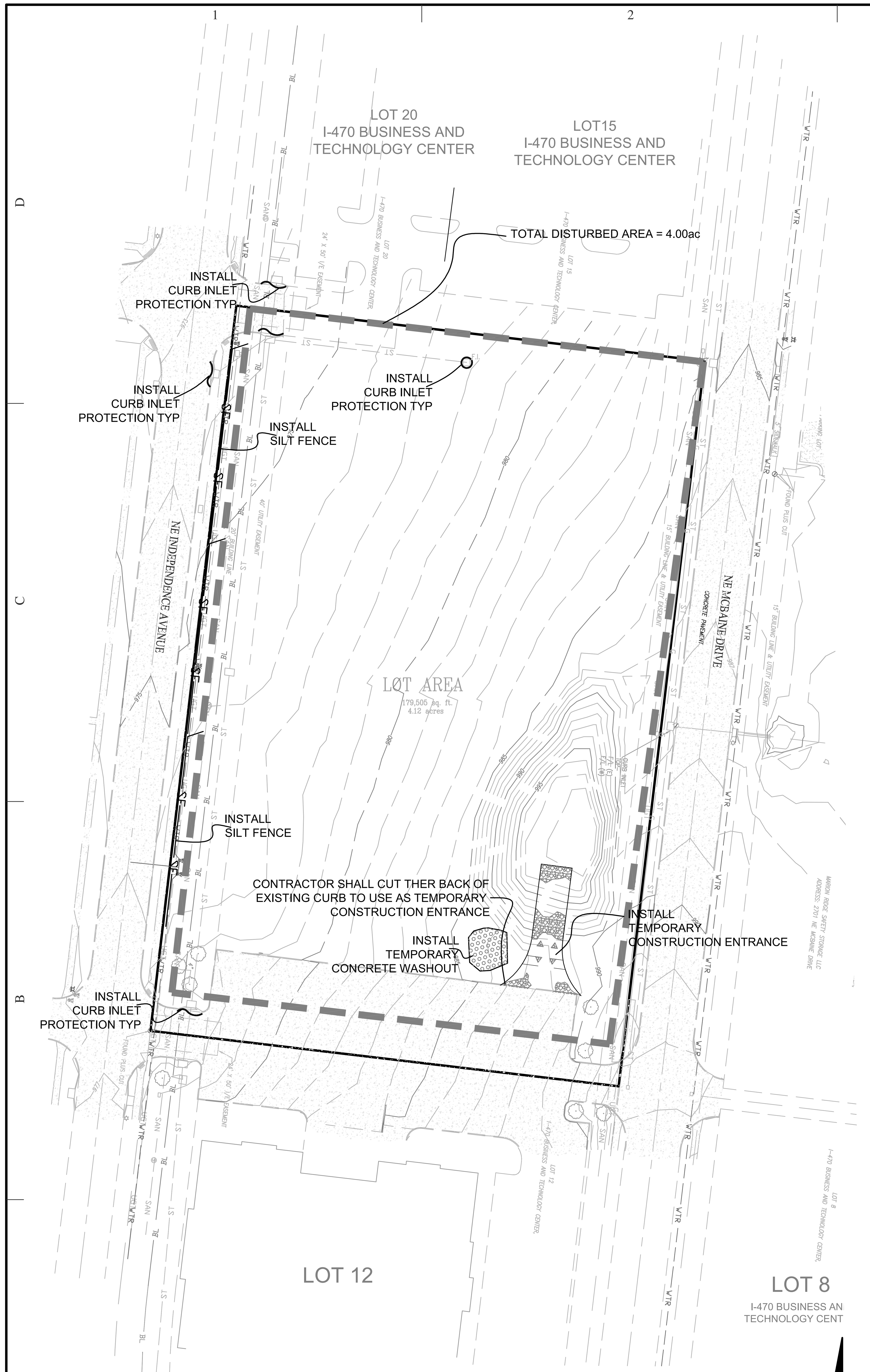
6-20-19

REVISIONS

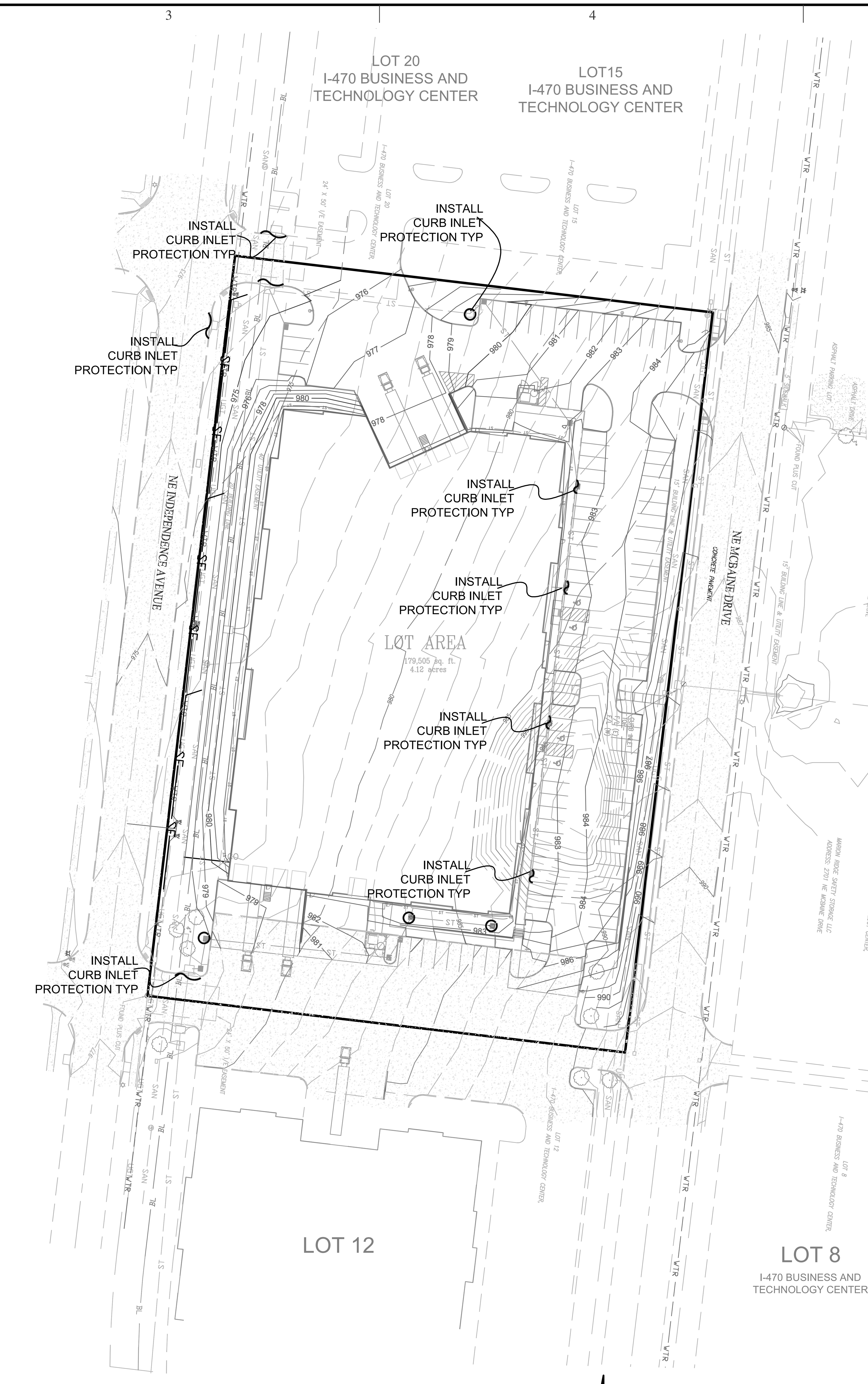
SHEET NO.
C300

JOB NO.
E18-337



ESC PHASE 1 PLAN

1"=50'



ESC PHASE 2 PLAN

1"=50'

GENERAL NOTES:

1. ADJACENT LAND ACRES SHALL BE PROTECTED FROM EROSION AND SILTATION WITH HAY BALES OR FILTER FABRIC. SILT CONTAINMENT SHALL REMAIN IN PLACE UNTIL VEGETATION IS REESTABLISHED.
2. OUTFALL LINES FROM THE ENCLOSED STORM DRAINAGE SYSTEMS SHALL BE PROVIDED WITH END SECTIONS AND THE DRAINAGE DITCHES RIPRAPPED TO DISSIPATE FLOW AND CONTROL EROSION.
3. THE FOLLOWING MAY BE USED AS EROSION/SILTATION CONTROL AS INDICATED ON THE PLANS: DEBRIS/SILT BASINS, SILT FENCING, STAKED STRAW BALES, RETENTION STRUCTURES, DIVERSIONS, OTHER METHODS AS DETAILED ON THE PLANS.
4. ALL METHODS SHALL BE UTILIZED AND MAINTAINED UNTIL THE SURFACE HAS BEEN STABILIZED WITH VEGETATION OR MULCH.
5. ALL STRAW BALES MUST BE EITHER WIRE BOUND OR STRING TIED. INSTALL BALES SO THAT BINDINGS ARE ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. BALES SHALL BE OF STRAW ONLY.
6. GRADING AND SEDIMENT CONTROL SHALL BE AS SPECIFIED IN THE "MODEL GRADING AND SEDIMENT CONTROL ORDINANCE" DEVELOPED BY THE MID-AMERICA ASSOCIATION OF CONSERVATION DISTRICTS AND THE MID-AMERICA REGIONAL COUNCIL.
7. STRAW BALES SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF FOUR INCHES.
8. STRAW BALES SHALL BE PLACED IN A ROW AS INDICATED ON THE ABOVE DRAWING.
9. STRAW BALES SHALL BE ANCHORED IN PLACE BY STAKES OR REBARS AS SHOWN IN THE DETAIL PROVIDED. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD A PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
10. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
11. STRAW BALES SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION AND SEEDING AND MULCHING OF GRADED AREAS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF STRAW BALES OR OTHER EROSION OR SEDIMENT CONTROL DEVICES UNTIL UPSLOPE AREAS HAVE BEEN STABILIZED.
13. VEGETATION ESTABLISHMENT FOR URBAN DEVELOPMENT SITES: GRADED AND EXCAVATED AREA OF 4.0 ACRES TO BE SOWN AFTER CONSTRUCTION WITH ONE OF THE FOLLOWING:
   A. TALL FESCUE – 25 LBS./ACRE
   B. SMOOTH BROME – 35 LBS./ACRES
   C. COMBINED: FESCUE @ 20 LBS./ACRE AND BROME @ 15 LBS./ACRE
   D. OTHER SEEDING MIXTURES AS APPROVED BY THE SOIL CONSERVATION SERVICE.

   SEEDING PERIODS:
   FESCUE OR BROME – MARCH 1 TO JUNE 1

   MULCH RATES: (REQUIRED FOR ALL PERMANENT SEEDING)
   4,356 LBS./ACRE

   FERTILIZER:
   A. NITROGEN 90 LBS./ACRE
   B. PHOSPHATE 90 LBS./ACRE
   C. POTASSIUM 90 LBS./ACRE
   D. LIME 700 LBS./ACRE (EFFECTIVE NEUTRALIZING MATERIAL AS PER STATE EVALUATION OF QUARRIED ROCK.)
   E. OTHER RATES AS DEFINED BY A CURRENT SOIL TEST AND APPROVED BY THE SOIL CONSERVATION SERVICE.

PHASE 1
SHALL INCLUDE THE FOLLOWING:
1. INSTALL SILT FENCE
2. INSTALL TEMPORARY CONSTRUCTION ENTRANCE

PHASE 2
SHALL INCLUDE THE FOLLOWING:
1. REMOVE TOP SOIL, CURB, SIDEWALK, FENCE, AND TREES.
2. ROUGH GRADE CUT A ENGEERED FILL
3. INSTALL UTILITIES
4. INSTALL FOOTING AND WALLS
5. INSTALL PARKING LOT, SIDEWALK AND MAIN ENTRANCES
6. SEED AND SOD ALL DISTURBED AREAS

PHASE 3
SHALL INCLUDE THE FOLLOWING:
1. FULLY VEGETATED SITE
2. REMOVE SILTATION FENCE

NOTE:
1. ALL ESC INSPECTIONS REPORTS SHALL BE MADE PER THE CURRENT SWIPP REQUIREMENTS AND COPIES KEEPED ONSITE.

SITE ESC PHASE 1 AND 2 PLAN

STATE OF MISSOURI
ROBERT A. WALQUIST
NUMBER
E-2001018825
REGISTERED PROFESSIONAL ENGINEER

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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1ST ISSUE
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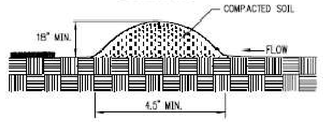
REVISIONS

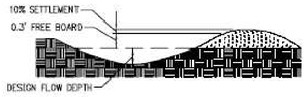
SHEET NO.
C301

JOB NO.
E18-337

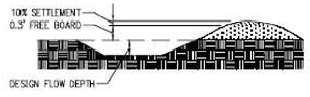
DIVERSIONS



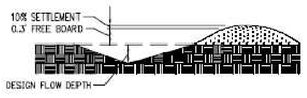
TEMPORARY DIVERSION DIKE
NOT TO SCALE



TYPICAL PARABOLIC DIVERSION

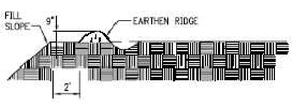


TYPICAL TRAPEZOIDAL DIVERSION

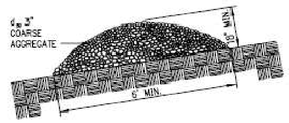


TYPICAL VEE-SHAPED DIVERSION

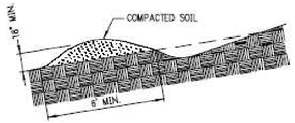
TEMPORARY RIGHT-OF-WAY DIVERSIONS



TEMPORARY FILL DIVERSION
NOT TO SCALE



TYPICAL GRAVEL STRUCTURE



TYPICAL EARTHEN STRUCTURE

TEMPORARY DIVERSION DIKE NOTES:

1. TEMPORARY DIVERSION DIKES MUST BE INSTALLED AS A FIRST STEP IN THE LAND-DISTURBING ACTIVITY AND MUST BE FUNCTIONAL PRIOR TO UPSLOPE LAND DISTURBANCE.
2. THE DIKE SHOULD BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. TEMPORARY OR PERMANENT SEEDING AND MULCH SHALL BE APPLIED TO THE DIKE IMMEDIATELY FOLLOWING ITS CONSTRUCTION.
4. THE DIKE SHOULD BE LOCATED TO MINIMIZE DAMAGES BY CONSTRUCTION OPERATIONS AND TRAFFIC.

TEMPORARY FILL DIVERSION NOTES:

1. THE DIVERSION SHALL BE CONSTRUCTED AT THE TOP OF THE FILL AT THE END OF EACH WORK DAY AS NEEDED.
2. THE DIVERSION SHALL BE LOCATED AT LEAST 2 FEET INSIDE THE TOP EDGE OF THE FILL.
3. THE SUPPORTING RIDGE SHALL BE CONSTRUCTED WITH A UNIFORM HEIGHT ALONG ITS ENTIRE LENGTH. WITHOUT UNIFORM HEIGHT, THE FILL DIVERSION MAY BE SUSCEPTIBLE TO BREACHING.

RIGHT-OF-WAY DIVERSION DETAIL NOTES:

1. THE DIVERSION SHALL BE INSTALLED AS SOON AS THE RIGHT-OF-WAY HAS BEEN CLEARED AND/OR GRADED.
2. ALL EARTHEN DIVERSIONS SHALL BE MACHINE- OR HAND-COMPACTED IN 8-INCH LIFTS.
3. THE OUTLET OF THE DIVERSION SHALL BE LOCATED IN AN UNDISTURBED AND STABILIZED AREA WHEN AT ALL POSSIBLE. THE FIELD LOCATION SHOULD BE ADJUSTED AS NEEDED TO UTILIZE A STABILIZED OUTLET.
4. EARTHENED DIVERSIONS WHICH WILL NOT BE SUBJECT TO CONSTRUCTION TRAFFIC SHOULD BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING.

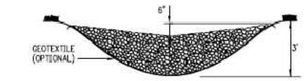
DIVERSION DETAIL NOTES:

1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS-SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, FREE OF IRREGULARITIES WHICH WILL IMPEDE FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETED DIVERSION. FILL SHALL BE COMPOSED OF SOIL WHICH IS FREE FROM EXCESSIVE ORGANIC DEBRIS, ROCKS, OR OTHER OBJECTIONABLE MATERIALS.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIVERSION.
5. PERMANENT STABILIZATION OF DISTURBED AREAS SHALL BE DONE IN ACCORDANCE WITH SECTION 2151.

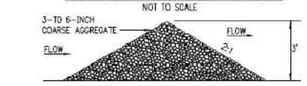
AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METROPOLITAN CHAPTER
DIVERSIONS	STANDARD DRAWING NUMBER ESC-29 ADOPTED:

SOURCE: MODIFIED FROM VA. DCR, 1992

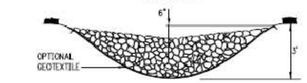
ROCK CHECK DAM



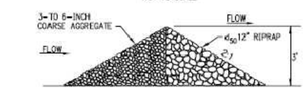
ROCK CHECK DAM
2 ACRES OR LESS OF DRAINAGE AREA
NOT TO SCALE



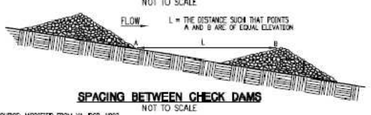
(SIDE VIEW)
NOT TO SCALE



2-10 ACRES OF DRAINAGE AREA
NOT TO SCALE



(SIDE VIEW)
NOT TO SCALE



SPACING BETWEEN CHECK DAMS
NOT TO SCALE

ROCK CHECK DAM NOTES:

A) CONSTRUCTION SPECIFICATIONS & INSTALLATION:

1. THE DRAINAGE AREA OF THE DITCH OR SWALE BEING PROTECTED SHALL NOT EXCEED 2 ACRES WHEN A COARSE AGGREGATE IS USED ALONE AND SHALL NOT EXCEED 10 ACRES WHEN A COMBINATION OF CLASS I RIPRAP AND COARSE AGGREGATE IS USED. AN EFFORT SHOULD BE MADE TO EXTEND THE STONE TO THE TOP OF CHANNEL BANKS.
2. THE MAXIMUM HEIGHT OF THE DAM SHALL BE 3 FEET. THE CENTER OF THE CHECK DAM IS AT THE SAME ELEVATION AS THE TOP OF THE OUTER EDGES.
3. FOR ADDED STABILITY, THE BASE OF THE CHECK DAM CAN BE KEYED INTO THE SOIL APPROXIMATELY 6 INCHES.
4. THE MAXIMUM SPACING BETWEEN THE DAMS SHOULD BE SUCH THAT THE TOE OF THE UPSTREAM DAM IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM DAM.
5. STONE SHOULD BE PLACED ACCORDING TO THE CONFIGURATION TO THE LEFT. HAND OR MECHANICAL PLACEMENT WILL BE NECESSARY TO ACHIEVE COMPLETE COVERAGE OF THE DITCH OR SWALE AND TO INSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES.
6. GEOTEXTILE MAY BE USED UNDER THE STONE TO PROVIDE A STABLE FOUNDATION AND TO FACILITATE REMOVAL OF THE STONE.

C) INSPECTION AND MAINTENANCE:

1. CHECK DAMS SHOULD BE CHECKED FOR SEDIMENT ACCUMULATION AFTER EACH STORM EVENT OF 1/2-INCH OR GREATER. SEDIMENT SHOULD BE REMOVED WHEN IT REACHES ONE HALF OF THE ORIGINAL HEIGHT OF THE DAM.
2. REGULAR INSPECTIONS SHOULD BE MADE TO ENSURE THAT THE CENTER OF THE DAM IS LOWER THAN THE EDGES. EROSION CAUSED BY HIGH FLOWS AROUND THE EDGES OF THE DAM SHOULD BE CORRECTED

D) REMOVAL OF PRACTICE:

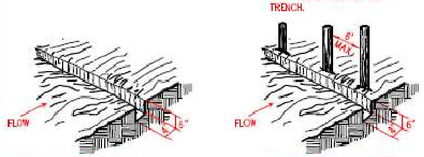
UNLESS THEY ARE TO BE PERMANENT, CHECK DAMS MUST BE REMOVED WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED. IN TEMPORARY DITCHES AND SWALES, CHECK DAMS SHOULD BE REMOVED AND THE DITCH FILLED WHEN THEY ARE NO LONGER NEEDED. IN PERMANENT STRUCTURES, CHECK DAMS SHOULD BE REMOVED WHEN A PERMANENT LINING CAN BE INSTALLED. IN THE CASE OF GRASS-LINED DITCHES, CHECK DAMS SHOULD BE REMOVED WHEN THE GRASS HAS MATURED SUFFICIENTLY TO PROTECT THE DITCH OR SWALE. THE AREA BENEATH THE CHECK DAMS SHOULD BE SEEDED AND MULCHED IMMEDIATELY AFTER THEY ARE REMOVED. THE USE OF FILTER CLOTH UNDERNEATH THE STONE WILL MAKE REMOVAL OF THE STONE EASIER.

AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METROPOLITAN CHAPTER
ROCK CHECK DAM	STANDARD DRAWING NUMBER ESC-13 ADOPTED:

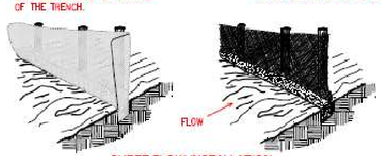
SOURCE: MODIFIED FROM VA. DCR, 1992

SEDIMENT FENCE

1. EXCAVATE A 6"x4" TRENCH.
2. SET THE STAKES ALONG THE DOWN SLOPE SIDE OF THE TRENCH.



3. STAPLE GEOTEXTILE MATERIAL TO STAKES AND EXTEND IT INTO AND AROUND THE BOTTOM OF THE TRENCH.
4. BACKFILL AND COMPACT THE EXCAVATED SOIL OVER THE GEOTEXTILE IN THE TRENCH.



SHEET FLOW INSTALLATION (PERSPECTIVE VIEW)
NOT TO SCALE

NOTE: POINT A SHOULD BE HIGHER THAN POINT B.

DRAINAGEWAY INSTALLATION (FRONT ELEVATION)
NOT TO SCALE

SEDIMENT FENCE NOTES:

A) INSTALLATION:

1. THE HEIGHT OF SEDIMENT FENCE SHALL BE A MINIMUM OF 16 INCHES ABOVE THE ORIGINAL GROUND SURFACE AND SHALL NOT EXCEED 34 INCHES ABOVE THE GROUND SURFACE.
2. THE FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE UNAVOIDABLE, FILTER CLOTH SHALL BE SECURELY SPLICED TOGETHER ONLY AT SUPPORT POSTS, WITH A MAX 6-INCH OVERLAP.
3. DIG A TRENCH AT LEAST 6 INCHES DEEP AND 4 INCHES WIDE ALONG THE FENCE ALIGNMENT.
4. DRIVE POSTS AT LEAST 24 INCHES INTO THE GROUND ON THE DOWNSLOPE SIDE OF THE TRENCH. SPACE POSTS A MAXIMUM OF 8 FEET APART.
5. EXTRA-STRENGTH SEDIMENT FENCE FABRIC SHALL BE USED. POSTS FOR THIS TYPE OF FABRIC SHALL BE PLACED A MAXIMUM OF 6 FEET APART. THE SEDIMENT FABRIC SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING A MINIMUM OF ONE INCH LONG, HEAVY-DUTY WIRE STAPLES OR TIE-WIRES, AND EIGHT INCHES OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. THE FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.
6. PLACE THE BOTTOM 1 FOOT OF FABRIC IN THE MINIMUM-OF-6-INCH DEEP TRENCH, LAPPING TOWARD THE UPSLOPE SIDE. BACKFILL WITH COMPACTED EARTH OR GRAVEL.
7. IF A SEDIMENT FENCE IS TO BE CONSTRUCTED ACROSS A DITCH LINE OR SWALE, IT MUST BE OF SUFFICIENT LENGTH TO ELIMINATE ENDFLOW, AND THE PLAN CONFIGURATION SHALL RESEMBLE AN ARC OR HORSESHOE, PLACED ON A CONTOUR, WITH THE ENDS ORIENTED UPSLOPE. EXTRA-STRENGTH SEDIMENT FABRIC SHALL BE USED WITH A MAXIMUM 3-FOOT SPACING OF POSTS.
8. TO REDUCE MAINTENANCE, EXCAVATE A SHALLOW SEDIMENT STORAGE AREA IN THE UPSLOPE SIDE OF THE FENCE. PROVIDE GOOD ACCESS IN AREAS OF HEAVY SEDIMENTATION FOR CLEAN OUT AND MAINTENANCE.
9. SEDIMENT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

B) TROUBLESHOOTING:

1. DETERMINE THE EXACT LOCATION OF UNDERGROUND UTILITIES, BEFORE FENCE INSTALLATION SO UTILITIES ARE NOT DISTURBED.
2. GRADE ALIGNMENT OF FENCE AS NEEDED TO PROVIDE A BROAD, NEARLY LEVEL, AREA UPSTREAM OF FENCE TO ALLOW SEDIMENT COLLECTION AREA.

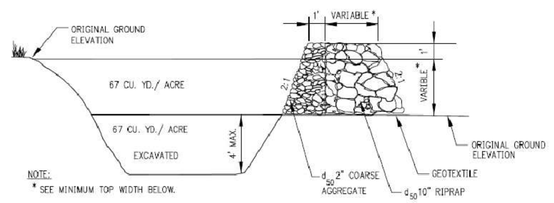
C) INSPECTION MAINTENANCE:

1. INSPECT SEDIMENT FENCES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REQUIRED REPAIRS IMMEDIATELY.
2. SHOULD THE FABRIC OF A SEDIMENT FENCE COLLAPSE, TEAR, DECOMPOSE, OR BECOME INEFFECTIVE, REPLACE IT PROMPTLY.
3. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE. AVOID DAMAGING OR UNDERMINING THE FENCE DURING CLEANOUT. SEDIMENT ACCUMULATION SHOULD NOT EXCEED 1/2 THE HEIGHT OF THE FENCE.
4. REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, AND BRING THE AREA TO GRADE AND STABILIZE IT AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY AND COMPLETELY STABILIZED.

AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METROPOLITAN CHAPTER
SEDIMENT FENCE	STANDARD DRAWING NUMBER ESC-10 ADOPTED:

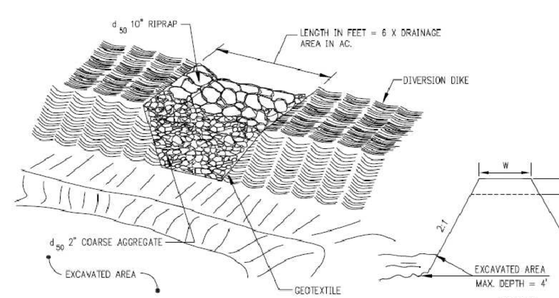
SOURCE: MODIFIED FROM VA. DCR, 1992

TEMPORARY SEDIMENT TRAP



NOTE:
* SEE MINIMUM TOP WIDTH BELOW.

CROSS SECTION OF OUTLET
NOT TO SCALE



OUTLET (PERSPECTIVE VIEW)

MINIMUM TOP WIDTH
NOT TO SCALE

H	H_O	W
1.5	0.5	2.0
2.0	1.0	2.0
2.5	1.5	2.5
3.0	2.0	2.5
3.5	2.5	3.0
4.0	3.0	3.0
4.5	3.5	4.0
5.0	4.0	4.5

TEMPORARY SEDIMENT TRAP NOTES:

A) CONSTRUCTION SPECIFICATIONS:

1. THE AREA UNDER THE EMBANKMENT SHALL BE CLEARED, GRUBBED, AND STRIPPED OF ANY VEGETATION AND ROOT MAT.
2. FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHOULD BE COMPACTED IN 6-INCH LAYERS BY TRAVERSING WITH CONSTRUCTION EQUIPMENT.
3. THE EARTHEN EMBANKMENT SHALL BE SEEDED WITH TEMPORARY OR PERMANENT VEGETATION IMMEDIATELY AFTER INSTALLATION.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT TO MINIMIZE EROSION AND WATER POLLUTION.
5. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE UPSLOPE DRAINAGE AREA HAS BEEN STABILIZED.
6. ALL CUT AND FILL SLOPES SHALL BE 2H:1V OR FLATTER EXCEPT FOR EXCAVATED, WET STORAGE AREAS WHICH MAY BE AT A MAXIMUM 1H:1V GRADE.

B) INSPECTION AND MAINTENANCE:

1. INSPECT THE TEMPORARY SEDIMENT TRAP AFTER EACH STORM EVENT OF 1/2-INCH OR GREATER.
2. REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN IT ACCUMULATES TO ONE-HALF THE DESIN VOLUME AS INDICATED BY THE CLEAN-OUT STAKE.
3. PERIODICALLY CHECK THE EMBANKMENT, SPILLWAY, AND OUTLET APRON FOR EROSION DAMAGE, SETTLING SEEPAGE, OR SLUMPING ALONG THE TOE AND REPAIR IMMEDIATELY.
4. REPLACE THE SPILLWAY GRAVEL FACING IF IT BECOMES CLOGGED.
5. INSPECT VEGETATION AND RESEED IF NECESSARY.
6. REPLACE ANY DISPLACED RIPRAP SO THAT NO REPLACEMENT ROCK IS ABOVE THE DESIGN GRADE.
7. REMOVE THE TEMPORARY SEDIMENT TRAP AFTER THE DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, INSPECTED, AND APPROVED. DO SO BY DRAINING ANY WATER, REMOVING THE SEDIMENT TO A DESIGNATED DISPOSAL AREA, AND GRADING THE SITE TO BLEND WITH THE SURROUNDING AREA; THEN STABILIZE.

AMERICAN PUBLIC WORKS ASSOCIATION	
APWA	KANSAS CITY METROPOLITAN CHAPTER
TEMPORARY SEDIMENT TRAP	STANDARD DRAWING NUMBER ESC-33 ADOPTED:

SOURCE: MODIFIED FROM VA. DCR, 1992

SITE ESC DETAILS

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

Quist Engineering, Inc
Civil Engineering for Residential & Commercial Site Development
821 NE Columbus St.
Lee's Summit, Missouri 64063
Phone: (816) 554-8673
email: rwalquist@quistengineering.com

1ST ISSUE
6-20-19

REVISIONS

SHEET NO.
C302

JOB NO.
E18-337

RATIONAL METHOD		A-1				
C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57	min				
Tt=	2.43					
Tc=	5	min				
FLOWS	AREA (ac)	INTENSITY (in/hr)				
K =	A =	I100	I50	I25	ED	I2
1	0.29	10.32	9.40	8.53	7.35	5.00
Q100 =	2.92	cfs	K=1.25			
Q50 =	2.55	cfs	K=1.20			
Q25 =	2.12	cfs	K=1.10			
Q10 =	1.66	cfs	K=1.0			
Q2 =	1.13	cfs	K=1.0			

RATIONAL METHOD		A-2				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.37	10.32	9.40	8.53	7.35	5.00
Q100 =	3.72	cfs	K=1.25			
Q50 =	3.25	cfs	K=1.20			
Q25 =	2.71	cfs	K=1.10			
Q10 =	2.12	cfs	K=1.0			
Q2 =	1.44	cfs	K=1.0			

RATIONAL METHOD		A-3				
C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57	min				
Tt=	2.43					
Tc=	5	min				
FLOWS	AREA (ac)	INTENSITY (in/hr)				
K =	A =	I100	I50	I25	ED	I2
1	0.41	10.32	9.40	8.53	7.35	5.00
Q100 =	4.13	cfs	K=1.25			
Q50 =	3.61	cfs	K=1.20			
Q25 =	3.00	cfs	K=1.10			
Q10 =	2.35	cfs	K=1.0			
Q2 =	1.60	cfs	K=1.0			

RATIONAL METHOD		A-4				
"C#	FLOW LENGTH	S= SLOPE				
0.78	300	4.0				
"TI =	6.29					
Tt=	1.71					
Tc=	8					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.34	9.21	8.38	7.57	6.53	4.44
Q100 =	3.05	cfs	K=1.25			
Q50 =	2.67	cfs	K=1.20			
Q25 =	2.21	cfs	K=1.10			
Q10 =	1.73	cfs	K=1.0			
Q2 =	1.18	cfs	K=1.0			

RAT+B36:P85IONAL METHOD		A-5				
C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57	min				
Tt=	2.43					
Tc=	5	min				
FLOWS	AREA (ac)	INTENSITY (in/hr)				
K =	A =	I100	I50	I25	ED	I2
1	0.02	10.32	9.40	8.53	7.35	5.00
Q100 =	0.20	cfs	K=1.25			
Q50 =	0.18	cfs	K=1.20			
Q25 =	0.15	cfs	K=1.10			
Q10 =	0.11	cfs	K=1.0			
Q2 =	0.08	cfs	K=1.0			

RATIONAL METHOD		A-6				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.23	10.32	9.40	8.53	7.35	5.00
Q100 =	2.31	cfs	K=1.25			
Q50 =	2.02	cfs	K=1.20			
Q25 =	1.68	cfs	K=1.10			
Q10 =	1.32	cfs	K=1.0			
Q2 =	0.90	cfs	K=1.0			

RATIONAL METHOD		A-7				
C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57	min				
Tt=	2.43					
Tc=	5	min				
FLOWS	AREA (ac)	INTENSITY (in/hr)				
K =	A =	I100	I50	I25	ED	I2
1	0.24	10.32	9.40	8.53	7.35	5.00
Q100 =	2.42	cfs	K=1.25			
Q50 =	2.11	cfs	K=1.20			
Q25 =	1.76	cfs	K=1.10			
Q10 =	1.38	cfs	K=1.0			
Q2 =	0.94	cfs	K=1.0			

RATIONAL METHOD		A-8				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.16	10.32	9.40	8.53	7.35	5.00
Q100 =	1.61	cfs	K=1.25			
Q50 =	1.41	cfs	K=1.20			
Q25 =	1.17	cfs	K=1.10			
Q10 =	0.92	cfs	K=1.0			
Q2 =	0.62	cfs	K=1.0			

RATIONAL METHOD		A-9				
C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57	min				
Tt=	2.43					
Tc=	5	min				
FLOWS	AREA (ac)	INTENSITY (in/hr)				
K =	A =	I100	I50	I25	ED	I2
1	0.24	10.32	9.40	8.53	7.35	5.00
Q100 =	2.42	cfs	K=1.25			
Q50 =	2.11	cfs	K=1.20			
Q25 =	1.76	cfs	K=1.10			
Q10 =	1.38	cfs	K=1.0			
Q2 =	0.94	cfs	K=1.0			

RATIONAL METHOD		A10				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.13	10.32	9.40	8.53	7.35	5.00
Q100 =	1.31	cfs	K=1.25			
Q50 =	1.14	cfs	K=1.20			
Q25 =	0.95	cfs	K=1.10			
Q10 =	0.75	cfs	K=1.0			
Q2 =	0.51	cfs	K=1.0			

RATIONAL METHOD		A-11				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.25	10.32	9.40	8.53	7.353	5.00
Q100 =	2.52	cfs	K=1.25			
Q50 =	2.20	cfs	K=1.20			
Q25 =	1.83	cfs	K=1.10			
Q10 =	1.43	cfs	K=1.0			
Q2 =	0.98	cfs	K=1.0			

RATIONAL METHOD		A-12				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.44	10.32	9.40	8.53	7.35	5.00
Q100 =	4.43	cfs	K=1.25			
Q50 =	3.87	cfs	K=1.20			
Q25 =	3.22	cfs	K=1.10			
Q10 =	2.52	cfs	K=1.0			
Q2 =	1.72	cfs	K=1.0			

RATIONAL METHOD		A-13				
"C#	FLOW LENGTH	S= SLOPE				
0.78	50	4.0				
"TI =	2.57					
Tt=	2.43					
Tc=	5					
FLOWS	AREA	INTENSITY				
K =	A =	I100	I50	I25	I10	I2
1	0.38	10.32	9.40	8.53	7.353	5.00
Q100 =	3.82	cfs	K=1.25			
Q50 =	3.34	cfs	K=1.20			
Q25 =	2.78	cfs	K=1.10			
Q10 =	2.18	cfs	K=1.0			
Q2 =	1.48	cfs	K=1.0			

Flow through a pipe			L-1
Using Mannings Equation			
FROM=	CI-1-5	Elin	980.00
TO=	CI-1-4	Elout	979.00
L (ft) =	107.50		
TOP OF	CI-1-5		982.50
COVER OVER PIPE=			1.50
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0093
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			3.43
Velocity in pipe V=			2.70
AREA =	A-1		
INLET	2.12 cfs		
Q25yr=	2.12 cfs		

Flow through a pipe			L-1
Using Mannings Equation			
FROM=	CI-1-4	Elin	979.00
TO=	CI-1-3	Elout	978.00
L (ft) =	96.55		
TOP OF	CI-1-4		982.70
COVER OVER PIPE=			2.45
Diameter of pipe (ft)=			1.25
Slope of pipe in (ft/ft)=			0.0104
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.3125
Wetted Perimeter P=			3.925
Area of Pipe A=			1.226563
Pipe Capacity Q=			6.57
Velocity in pipe V=			3.94
AREA =	A-2		
INLET	2.71 cfs		
Q25yr=	4.83 cfs		

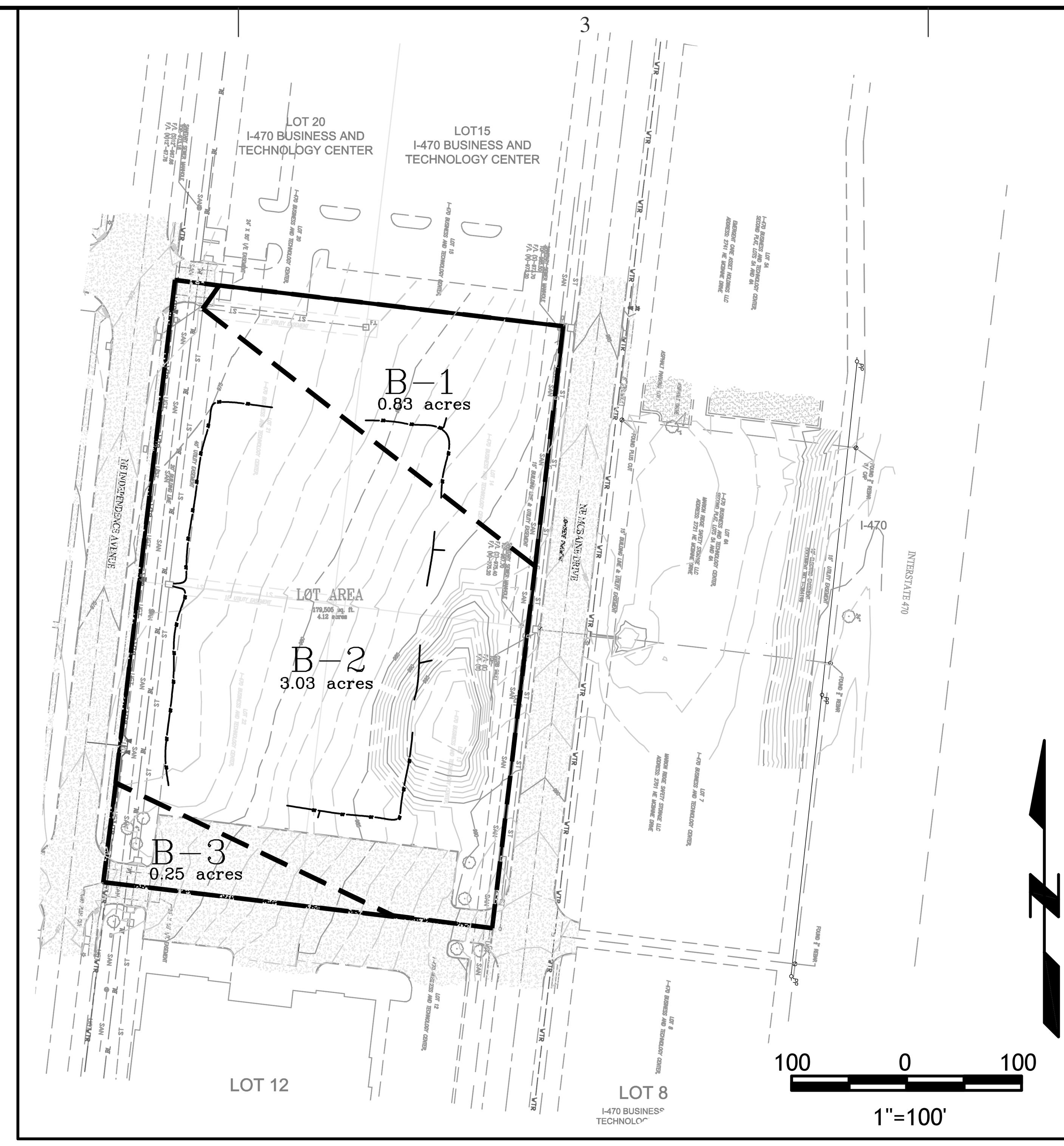
Flow through a pipe			L-2
Using Mannings Equation			
FROM=	CI-2-2	Elin	971.00
TO=	EX-CI	Elout	967.00
L (ft) =	28.80		
TOP OF	CI-2-2		974.50
COVER OVER PIPE=			2.50
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.1389
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			13.27
Velocity in pipe V=			1.49
AREA =	A-8		
INLET	1.17 cfs		
Q25yr=	1.17 cfs		

Flow through a pipe			L-1
Using Mannings Equation			
FROM=	CI-1-3	Elin	978.00
TO=	CI-1-2	Elout	977.00
L (ft) =	72.19		
TOP OF	CI-1-3		982.60
COVER OVER PIPE=			3.10
Diameter of pipe (ft)=			1.5
Slope of pipe in (ft/ft)=			0.0139
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.375
Wetted Perimeter P=			4.71
Area of Pipe A=			1.76625
Pipe Capacity Q=			12.36
Velocity in pipe V=			4.43
AREA =	A-3		
INLET	3 cfs		
Q25yr=	7.83 cfs		

Flow through a pipe			L-1
Using Mannings Equation			
FROM=	CI-1-2	Elin	977.00
TO=	AI-1-1	Elout	976.00
L (ft) =	45.11		
TOP OF	CI-1-2		982.70
COVER OVER PIPE=			4.20
Diameter of pipe (ft)=			1.5
Slope of pipe in (ft/ft)=			0.0222
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.375
Wetted Perimeter P=			4.71
Area of Pipe A=			1.76625
Pipe Capacity Q=			15.63
Velocity in pipe V=			5.68
AREA =	A-4		
INLET	2.21 cfs		
Q25yr=	10.04 cfs		

Flow through a pipe			L-1
Using Mannings Equation			
FROM=	AI-1-1	Elin	976.00
TO=	CI-1-1	Elout	975.00
L (ft) =	105.32		
TOP OF	AI-1-1		982.40
COVER OVER PIPE=			4.90
Diameter of pipe (ft)=			1.5
Slope of pipe in (ft/ft)=			0.0095
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.375
Wetted Perimeter P=			4.71
Area of Pipe A=			1.76625
Pipe Capacity Q=			10.23
Velocity in pipe V=			5.77
AREA =	A-5		
INLET	0.15 cfs		
Q25yr=	10.19 cfs		

Flow through a pipe			L-1
Using Mannings Equation			
FROM=	CI-1-1	Elin	975.00
TO=	EX-FI	Elout	973.00
L (ft) =	13.32		
TOP OF	CI-1-1		976.00
COVER OVER PIPE=			-0.50
Diameter of pipe (ft)=			1.5
Slope of pipe in (ft/ft)=			0.1502
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.375
Wetted Perimeter P=			4.71
Area of Pipe A=			1.76625
Pipe Capacity Q=			40.68
Velocity in pipe V=			6.72
AREA =	A-6		
INLET	1.68 cfs		
Q25yr=	11.87 cfs		



PRE-DEVELOPMENT

Flow through a pipe			L-3
Using Mannings Equation			
FROM=	AI-3-3	Elin	979.00
TO=	AI-3-2	Elout	978.00
L (ft) =	58.14		
TOP OF	AI-3-3		982.00
COVER OVER PIPE=			2.00
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0172
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			4.67
Velocity in pipe V=			2.24
AREA =	A-9		
INLET	1.76 cfs		
Q25yr=	1.76 cfs		

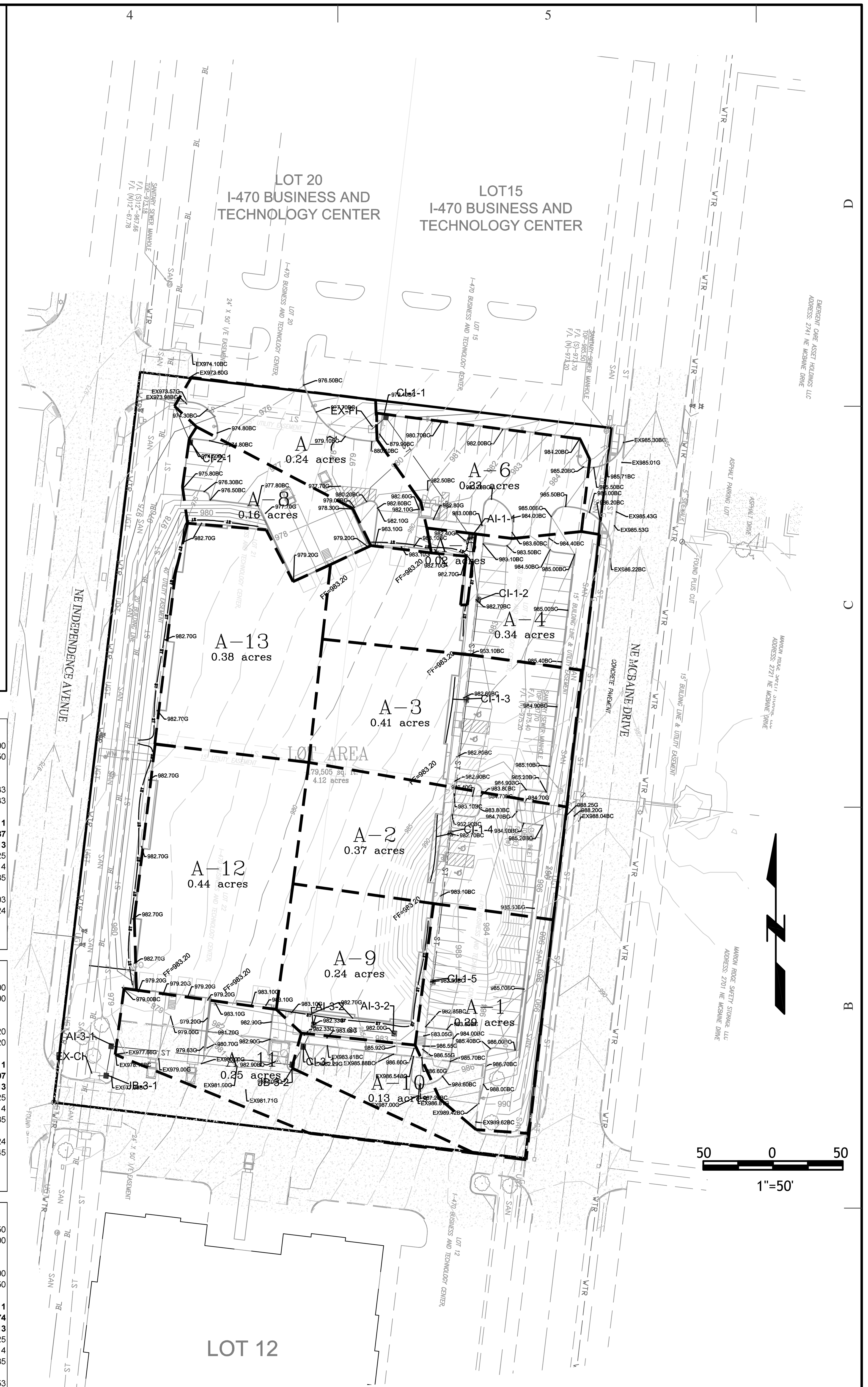
Flow through a pipe			L-3
Using Mannings Equation			
FROM=	AI-3-2	Elin	978.00
TO=	CI-3-1	Elout	977.50
L (ft) =	17.45		
TOP OF	AI-3-2		982.33
COVER OVER PIPE=			3.33
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0287
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			6.03
Velocity in pipe V=			2.24
AREA =	N/A		
INLET	cfs		
Q25yr=	1.76 cfs		

Flow through a pipe			L-3
Using Mannings Equation			
FROM=	CI-3-1	Elin	977.50
TO=	JB-3-2	Elout	977.00
L (ft) =	15.09		
TOP OF	CI-3-1		982.29
COVER OVER PIPE=			3.79
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0331
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			6.48
Velocity in pipe V=			3.45
AREA =	A-10		
INLET	0.95 cfs		
Q25yr=	2.71 cfs		

Flow through a pipe			L-3
Using Mannings Equation			
FROM=	JB-3-2	Elin	977.00
TO=	AI-3-1	Elout	973.00
L (ft) =	130.39		
TOP OF	JB-3-2		983.20
COVER OVER PIPE=			5.20
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0307
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			6.24
Velocity in pipe V=			3.45
AREA =	N/A		
INLET	cfs		
Q25yr=	2.71 cfs		

Flow through a pipe			L-3
Using Mannings Equation			
FROM=	AI-3-1	Elin	973.00
TO=	JB-3-1	Elout	972.50
L (ft) =	21.42		
TOP OF	AI-3-1		977.40
COVER OVER PIPE=			3.40
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0233
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			5.44
Velocity in pipe V=			5.78
AREA =	A-11		
INLET	1.83 cfs		
Q25yr=	4.54 cfs		

Flow through a pipe			L-3
Using Mannings Equation			
FROM=	JB-3-1	Elin	972.50
TO=	EX-CI	Elout	972.00
L (ft) =	5.72		
TOP OF	JB-3-1		978.00
COVER OVER PIPE=			4.50
Diameter of pipe (ft)=			1
Slope of pipe in (ft/ft)=			0.0874
Roughnees Coef. N=			0.013
Hydralic Radius R=			0.25
Wetted Perimeter P=			3.14
Area of Pipe A=			0.785
Pipe Capacity Q=			10.53
Velocity in pipe V=			5.78
AREA =	N/A		
INLET	cfs		
Q25yr=	4.54 cfs		



POST-DEVELOPMENT

SITE STORM DRAINAGE PLAN AND CALCULATIONS

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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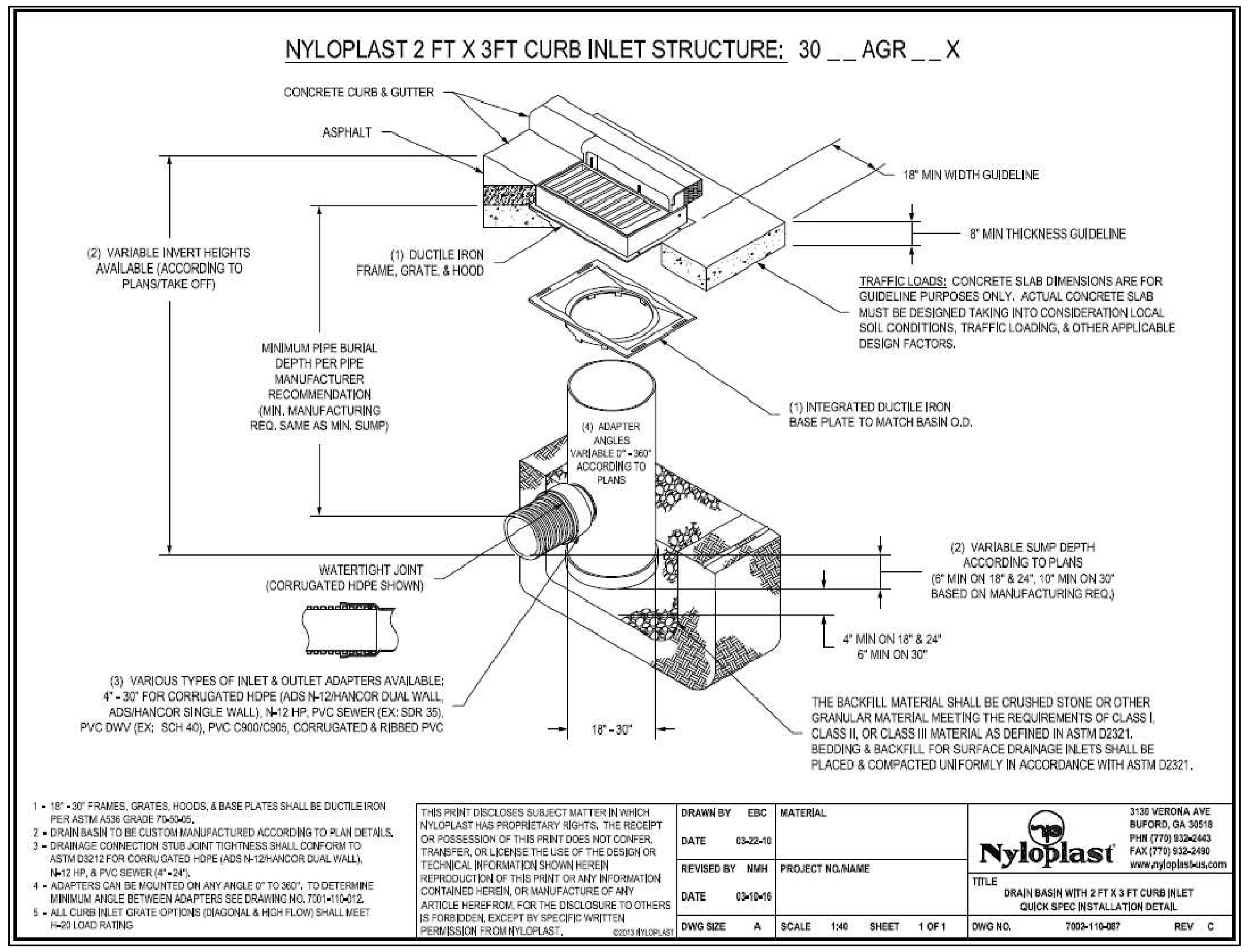
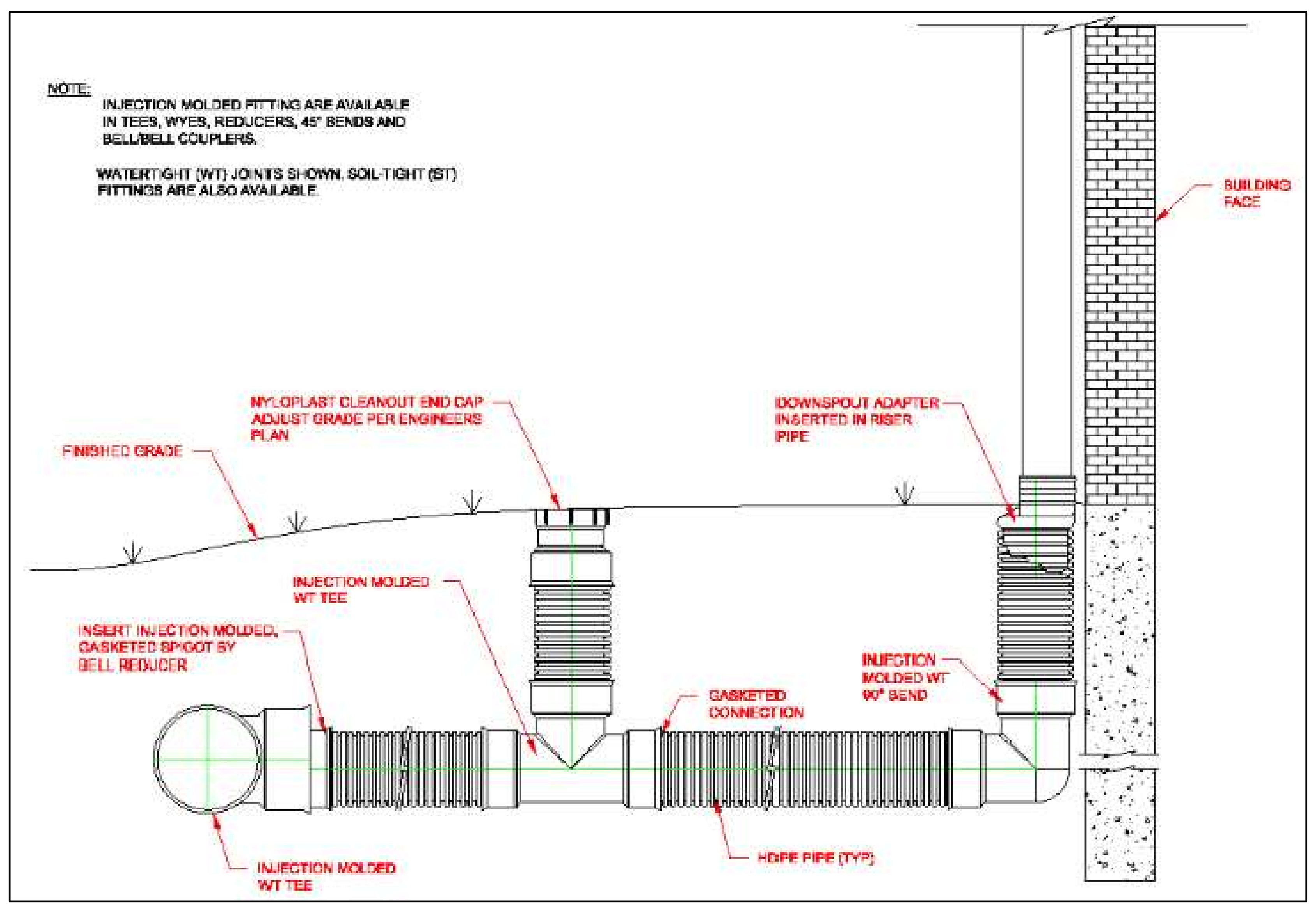
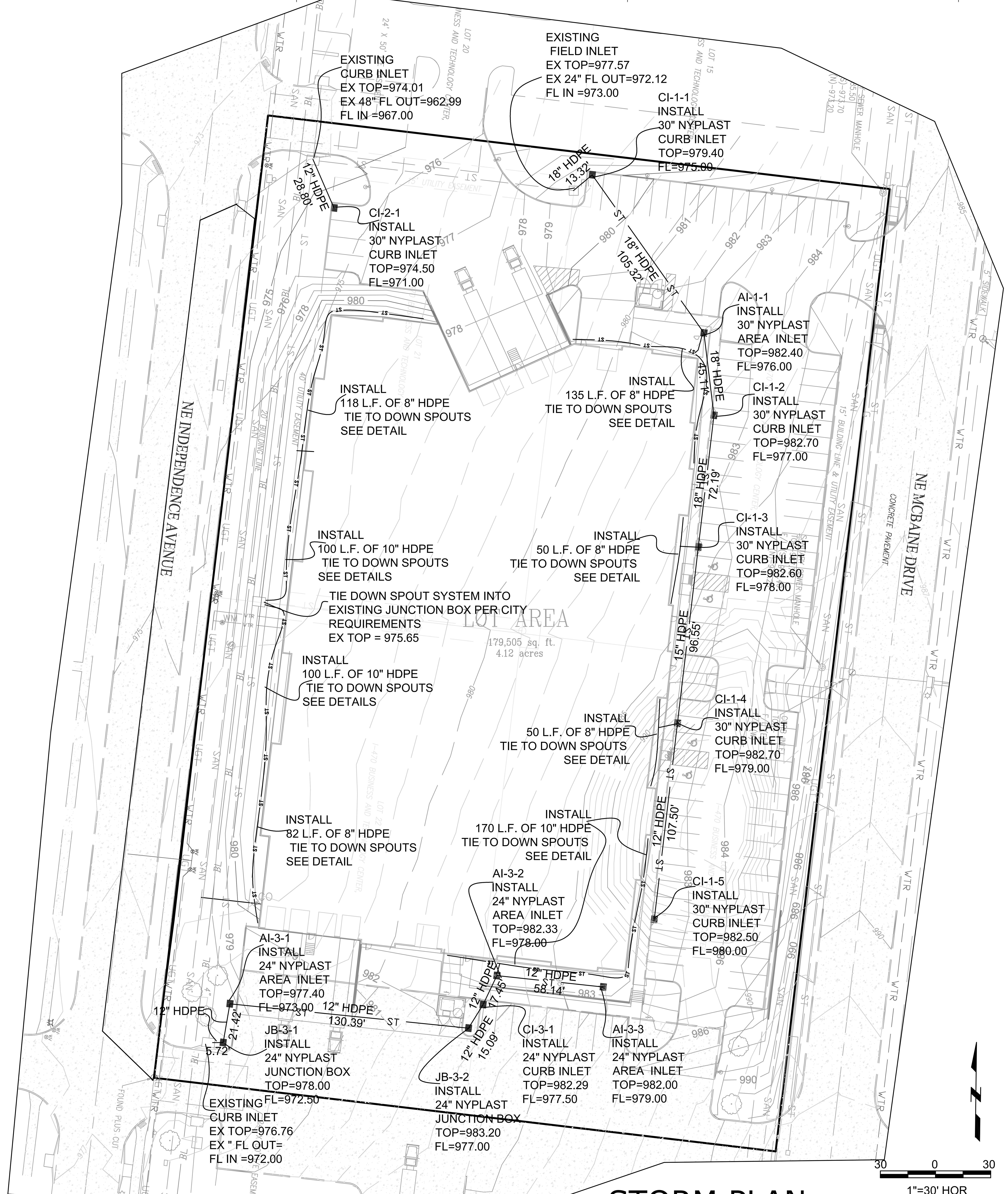


NYLOPLAST 2 FT X 3FT CURB INLET STRUCTURE: 30 _ _ AGR _ _ X
CONCRETE CURB & GUTTER
ASPHALT
18" MIN WIDTH GUIDELINE
8" MIN THICKNESS GUIDELINE
(2) VARIABLE INVERT HEIGHTS AVAILABLE (ACCORDING TO PLANS/TAKE OFF)
(1) DUCTILE IRON FRAME, GRATE, & HOOD
TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS.
MINIMUM PIPE BURIAL DEPTH PER PIPE MANUFACTURER RECOMMENDATION (MIN. MANUFACTURING REQ. SAME AS MIN. SUMP)
(1) INTEGRATED DUCTILE IRON BASE PLATE TO MATCH BASIN O.D.
WATERTIGHT JOINT (CORRUGATED HDPE SHOWN)
(2) VARIABLE SUMP DEPTH ACCORDING TO PLANS
THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.
18" - 30"
Nyloplast
DRAIN BASIN WITH 2 FT X 3 FT CURB INLET QUICK SPEC INSTALLATION DETAIL



NOTE:
INJECTION MOLDED FITTING ARE AVAILABLE IN TEES, WYES, REDUCERS, 45° BENDS AND BELL/BELL COUPLERS.
WATERTIGHT (WT) JOINTS SHOWN. SOIL-TIGHT (ST) FITTINGS ARE ALSO AVAILABLE.
BUILDING FACE
NYLOPLAST CLEANOUT END CAP ADJUST GRADE PER ENGINEERS PLAN
DOWNSPOUT ADAPTER INSERTED IN RISER PIPE
FINISHED GRADE
INJECTION MOLDED WT TEE
INSERT INJECTION MOLDED, GASKETED SPIGOT BY BELL REDUCER
GASKETED CONNECTION
INJECTION MOLDED WT 90° BEND
INJECTION MOLDED WT TEE
HDPE PIPE (TYP)



EXISTING CURB INLET EX TOP=974.01 EX 48" FL OUT=962.99 FL IN =967.00
EXISTING FIELD INLET EX TOP=977.57 EX 24" FL OUT=972.12 FL IN =973.00
CI-1-1 INSTALL 30" NYPLAST CURB INLET TOP=979.40 FL=975.00
18" HDPE 13.32'
12" HDPE 28.80'
CI-2-1 INSTALL 30" NYPLAST CURB INLET TOP=974.50 FL=971.00
18" HDPE 105.32'
AI-1-1 INSTALL 30" NYPLAST AREA INLET TOP=982.40 FL=976.00
18" HDPE 45.14'
CI-1-2 INSTALL 30" NYPLAST CURB INLET TOP=982.70 FL=977.00
INSTALL 118 L.F. OF 8" HDPE TIE TO DOWN SPOUTS SEE DETAIL
INSTALL 135 L.F. OF 8" HDPE TIE TO DOWN SPOUTS SEE DETAIL
18" HDPE 72.19'
NE INDEPENDENCE AVENUE
NE MCBAINE DRIVE
CI-1-3 INSTALL 30" NYPLAST CURB INLET TOP=982.60 FL=978.00
INSTALL 100 L.F. OF 10" HDPE TIE TO DOWN SPOUTS SEE DETAILS
INSTALL 50 L.F. OF 8" HDPE TIE TO DOWN SPOUTS SEE DETAIL
TIE DOWN SPOUT SYSTEM INTO EXISTING JUNCTION BOX PER CITY REQUIREMENTS EX TOP = 975.65
LOT AREA 179,505 sq. ft. 4.12 acres
15" HDPE 96.55'
INSTALL 100 L.F. OF 10" HDPE TIE TO DOWN SPOUTS SEE DETAILS
CI-1-4 INSTALL 30" NYPLAST CURB INLET TOP=982.70 FL=979.00
INSTALL 50 L.F. OF 8" HDPE TIE TO DOWN SPOUTS SEE DETAIL
INSTALL 82 L.F. OF 8" HDPE TIE TO DOWN SPOUTS SEE DETAIL
INSTALL 170 L.F. OF 10" HDPE TIE TO DOWN SPOUTS SEE DETAIL
12" HDPE 107.50'
AI-3-2 INSTALL 24" NYPLAST AREA INLET TOP=982.33 FL=978.00
CI-1-5 INSTALL 30" NYPLAST CURB INLET TOP=982.50 FL=980.00
AI-3-1 INSTALL 24" NYPLAST AREA INLET TOP=977.40 FL=973.00
12" HDPE 58.14'
12" HDPE 7.45'
12" HDPE 21.42'
12" HDPE 130.39'
12" HDPE 15.09'
5.72'
JB-3-1 INSTALL 24" NYPLAST JUNCTION BOX TOP=978.00 FL=972.50
CI-3-1 INSTALL 24" NYPLAST CURB INLET TOP=982.29 FL=977.50
AI-3-3 INSTALL 24" NYPLAST AREA INLET TOP=982.00 FL=979.00
JB-3-2 INSTALL 24" NYPLAST JUNCTION BOX TOP=983.20 FL=977.00
EXISTING CURB INLET EX TOP=976.76 EX " FL OUT= FL IN =972.00
30 0 30
1"=30' HOR

STORM PLAN

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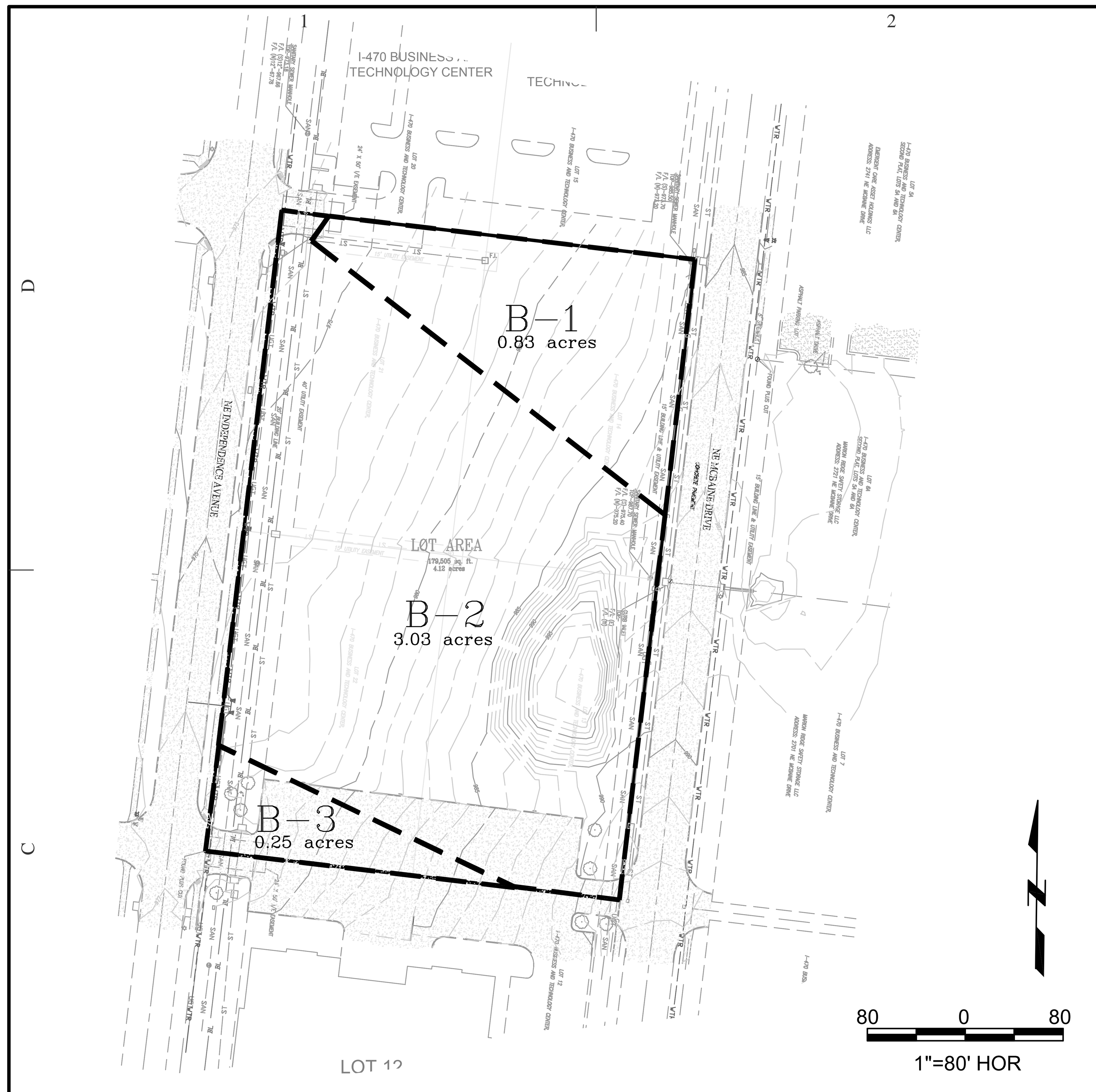

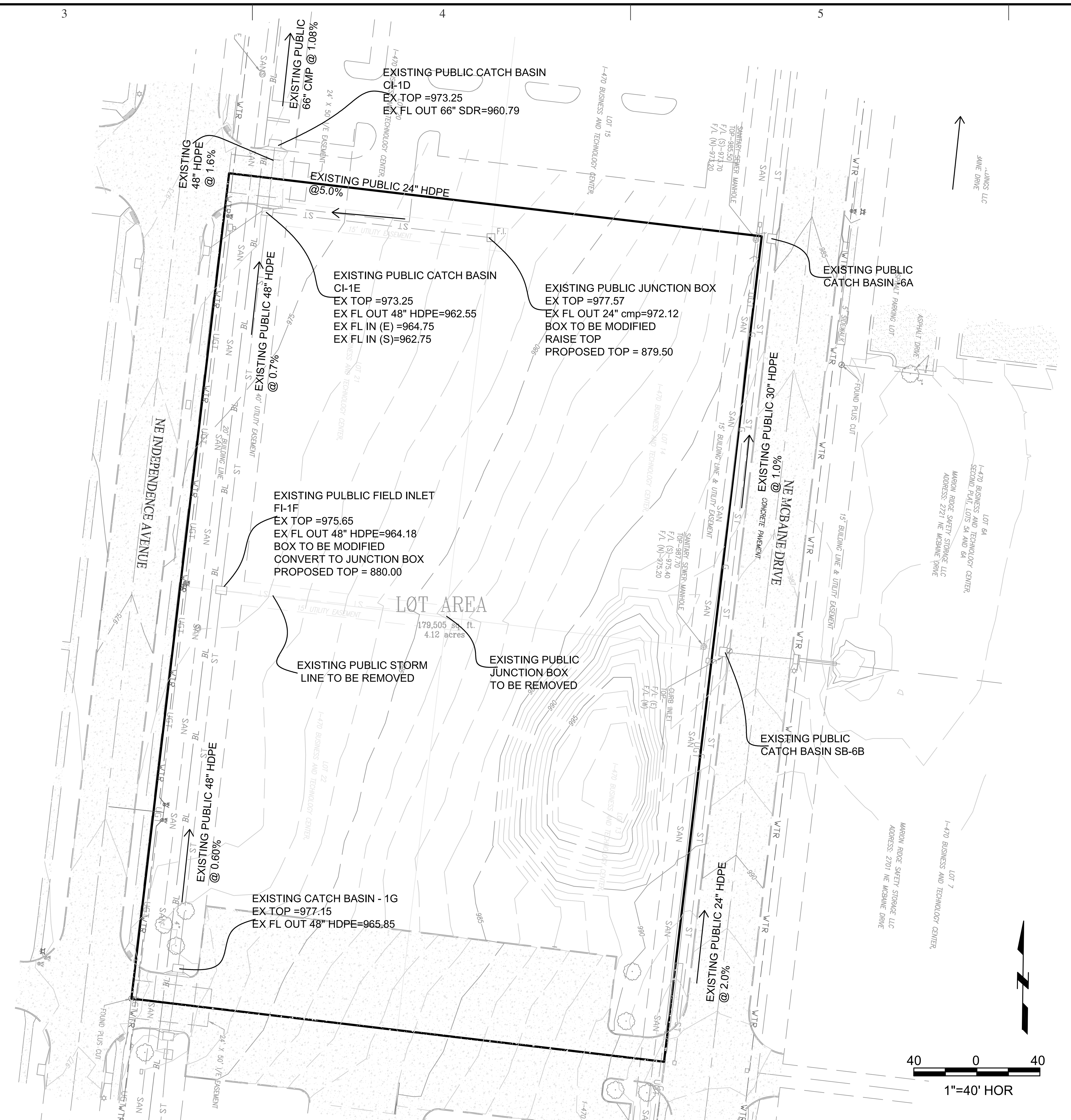

STORM SEWER CALCULATIONS

I-470 BUSINESS AND TECHNOLOGY CENTER

PROJECT NO. 04-057

STORM SEWER NO.	SEWER LOCATION FROM STRUCTURE NO.	SEWER LOCATION TO STRUCTURE NO.	TRIBUTARY AREA (AC.) AREA DESIGNATION ACRES		TRIBUTARY AREA (AC.) TOTAL	COMPOSITE RUNOFF COEFFICIENT	TIME OF FLOW Ti	TIME OF FLOW Tt	TIME OF FLOW Tc	DESIGN INTENSITY [in/hr] I[10]	10 YEAR STORM RUNOFF [cfs] AREA Q[10]	10 YEAR STORM RUNOFF [cfs] TOTAL Q[10] T	GUTTER INLET SLOPE [%]	GUTTER CAPACITY [cfs]	CURB INLET INLET CAPACITY [cfs]	CURB INLET 80% INLET CAPACITY [cfs]	10 YEAR BY PASS [cfs]	Gutter Inlet Length
LINE 1	CB 1H	CB 1G	1K	1.38	7.96	0.8	5.0	0.0	5.0	7.35	8.1	45.8	2.00	4.8	7.0	5.6	0	6
LINE 1	CB 1G	FI 1F	-	0.00	7.96	0.8	5.0	0.0	5.0	7.35	0.0	45.8	2.00	4.8	7.0	5.6	0	6
LINE 1	FI 1F	CB 1E	1H	0.47	9.37	0.8	5.0	0.0	5.0	7.35	2.8	54.1	-	-	35.2	28.2	0	6x4x8"/4
LINE 1	CB 1E	CB 1D	1G	1.23	11.54	0.8	5.0	0.0	5.0	7.35	7.2	66.8	2.00	4.8	7.8	6.2	0	6
LINE 1	CB 1D	FI 1C	-	0.00	11.54	0.8	5.0	0.0	5.0	7.35	0.0	66.8	2.00	4.8	7.8	6.2	0	7
LINE 1	FI 1C	CB 1B	1E	0.91	39.29	0.8	5.0	0.0	5.0	7.35	5.4	221.7	SUMP	-	49.2	39.4	0	7x7x8"/4
LINE 1	CB 1B	CB 1A	13B	0.72	40.01	0.8	5.0	0.0	5.0	7.35	4.2	225.9	SUMP	-	11.8	9.4	0	8
LINE 1	CB 1A	FI 15G	13A	0.93	40.94	0.8	5.0	0.0	5.0	7.35	5.5	231.4	SUMP	-	11.8	9.4	0	8
LINE 9	JB 9A	CB 1E	9A	0.94	0.94	0.8	5.0	0.0	5.0	7.35	5.5	5.5	-	-	0.0	0.0	0	4x4
LINE 10	JB 10A	FI 1F	10A	0.94	0.94	0.8	5.0	0.0	5.0	7.35	5.5	5.5	-	-	0.0	0.0	0	4x4

STORM SEWER CALCULATIONS

I-470 BUSINESS AND TECHNOLOGY CENTER

PROJECT NO. 04-057

DESIGN - 100 YEAR STORM Pipe Size [in]	Pipe Slope [%]	Pipe Type	Rough Coeff [MANNG]	Design Velocity [fps]	Depth Flow (inches) Q[10]	Full Velocity [fps]	Full Flow [cfs]	PROFILE Cen-Cen Length [ft]	Pipe Drop [ft]	Invert Drop [ft]	Start Invert [ft]	Finish Invert [ft]	100 YEAR STORM INTENSITY [in/hr] I[100]	RUNOFF [cfs] AREA Q[100]	RUNOFF [cfs] In Pipe Upstream (cfs)	RUNOFF [cfs] By Pass In (cfs)	RUNOFF [cfs] TOTAL Q[100]	In Pipe Downstream [cfs]	By Pass Out [cfs]
48	0.60	HDPE	0.012	10.1	27.3	9.6	120.5	43.00	0.26	0.20	964.81	964.55	10.32	14.2	66.4	0.0	80.6	80.6	0.0
48	0.60	HDPE	0.012	10.1	27.3	9.6	120.5	242.17	1.45	0.20	964.35	962.90	10.32	0.0	80.6	0.0	80.6	80.6	0.0
48	0.60	HDPE	0.012	10.5	30.7	9.6	120.5	242.17	1.45	0.20	962.70	961.25	10.32	4.9	90.3	0.0	95.2	95.2	0.0
48	0.60	HDPE	0.012	10.9	36.4	9.6	120.5	43.00	0.26	0.20	961.05	960.79	10.32	12.7	108.6	0.0	121.3	121.3	0.0
66	1.00	SCOR	0.012	13.5	25.0	15.3	363.8	123.10	1.23	0.20	960.59	959.36	10.32	0.0	121.3	0.0	121.3	121.3	0.0
72	0.80	SCOR	0.012	16.0	47.7	14.5	410.3	35.12	0.28	0.50	958.86	958.58	10.32	9.4	328.9	0.0	338.3	338.3	0.0
72	0.80	SCOR	0.012	16.1	48.5	14.5	410.3	42.74	0.34	1.00	957.58	957.24	10.32	7.4	338.3	0.0	345.7	345.7	0.0
72	0.80	SCOR	0.012	16.2	49.6	14.5	410.3	43.00	0.34	0.20	957.04	956.70	10.32	9.6	345.7	0.0	355.3	355.3	0.0
24	5.00	CMP	0.023	8.2	9.6	9.1	28.6	144.00	7.20	0.00	971.95	964.75	10.32	9.7	0.0	0.0	9.7	9.7	0.0
24	5.00	CMP	0.023	8.2	9.6	9.1	28.6	143.64	7.18	0.00	973.58	966.40	10.32	9.7	0.0	0.0	9.7	9.7	0.0

PUBLIC STORM IMPROVEMENT PLAN

STATE OF MISSOURI
ROBERT A. WALQUIST
NUMBER
E-2001018825
6/20/19
REGISTERED PROFESSIONAL ENGINEER

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

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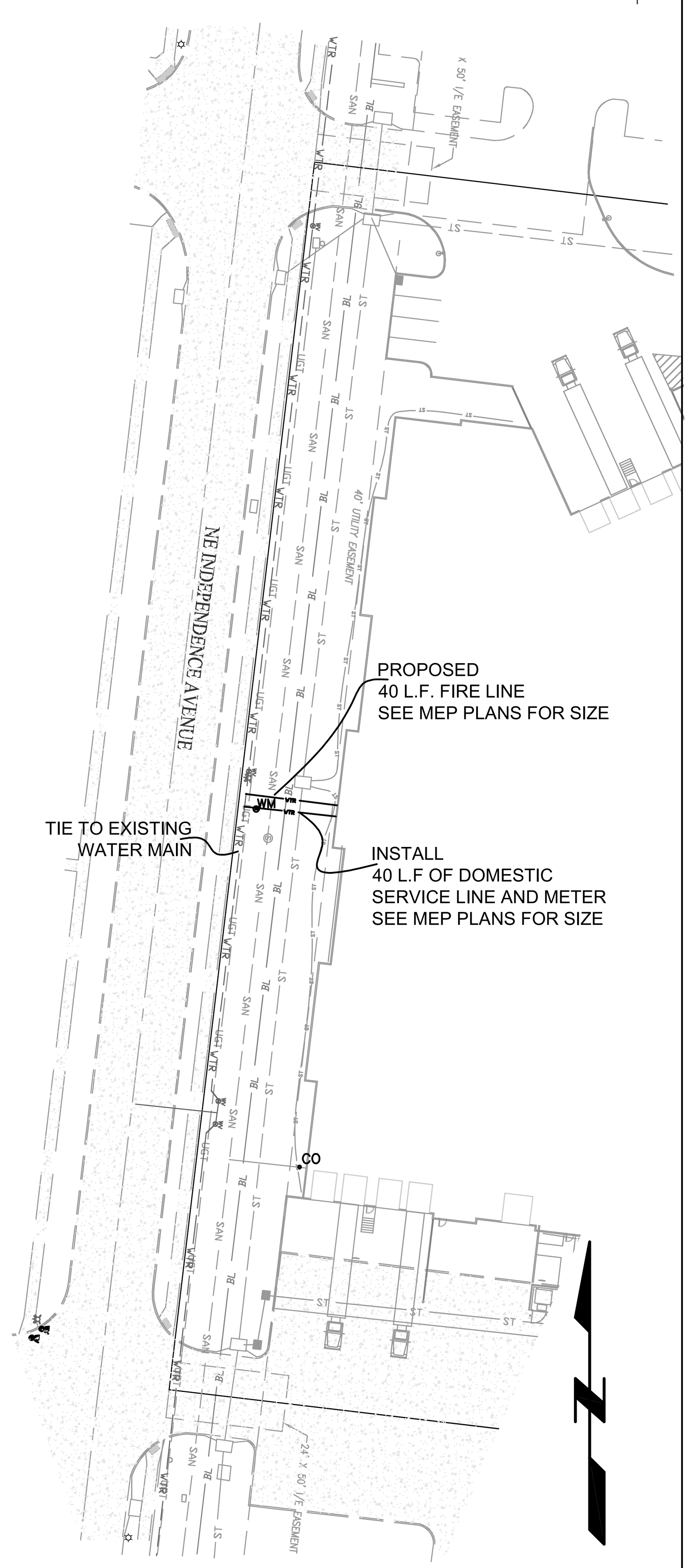
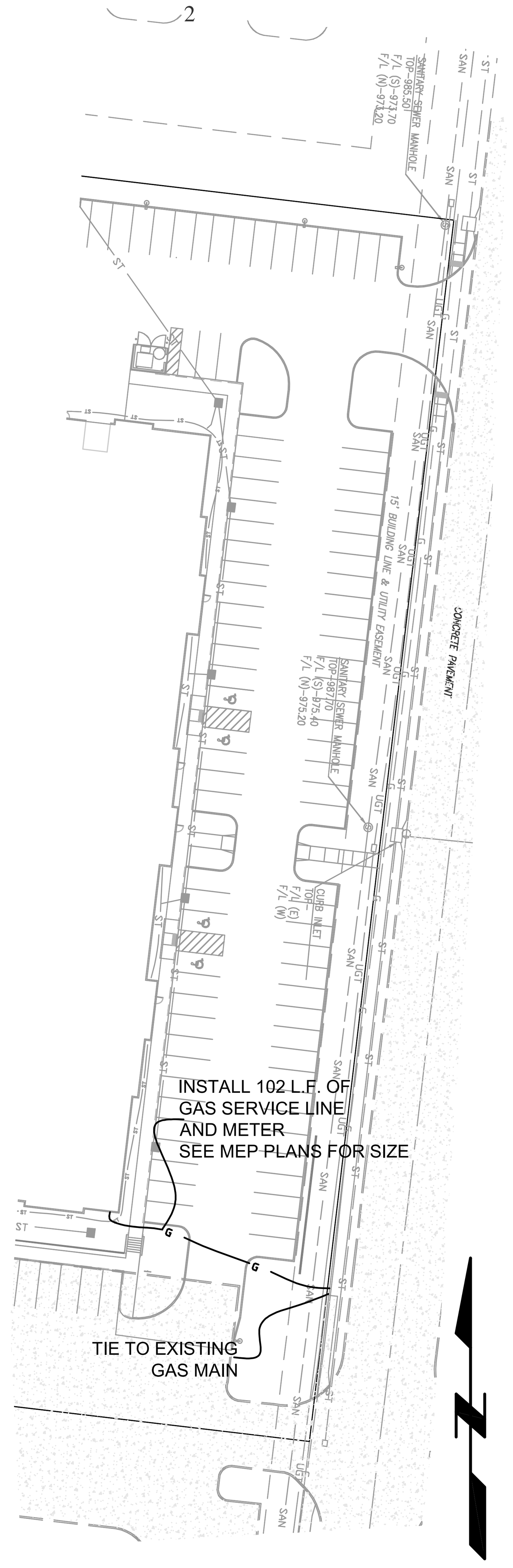
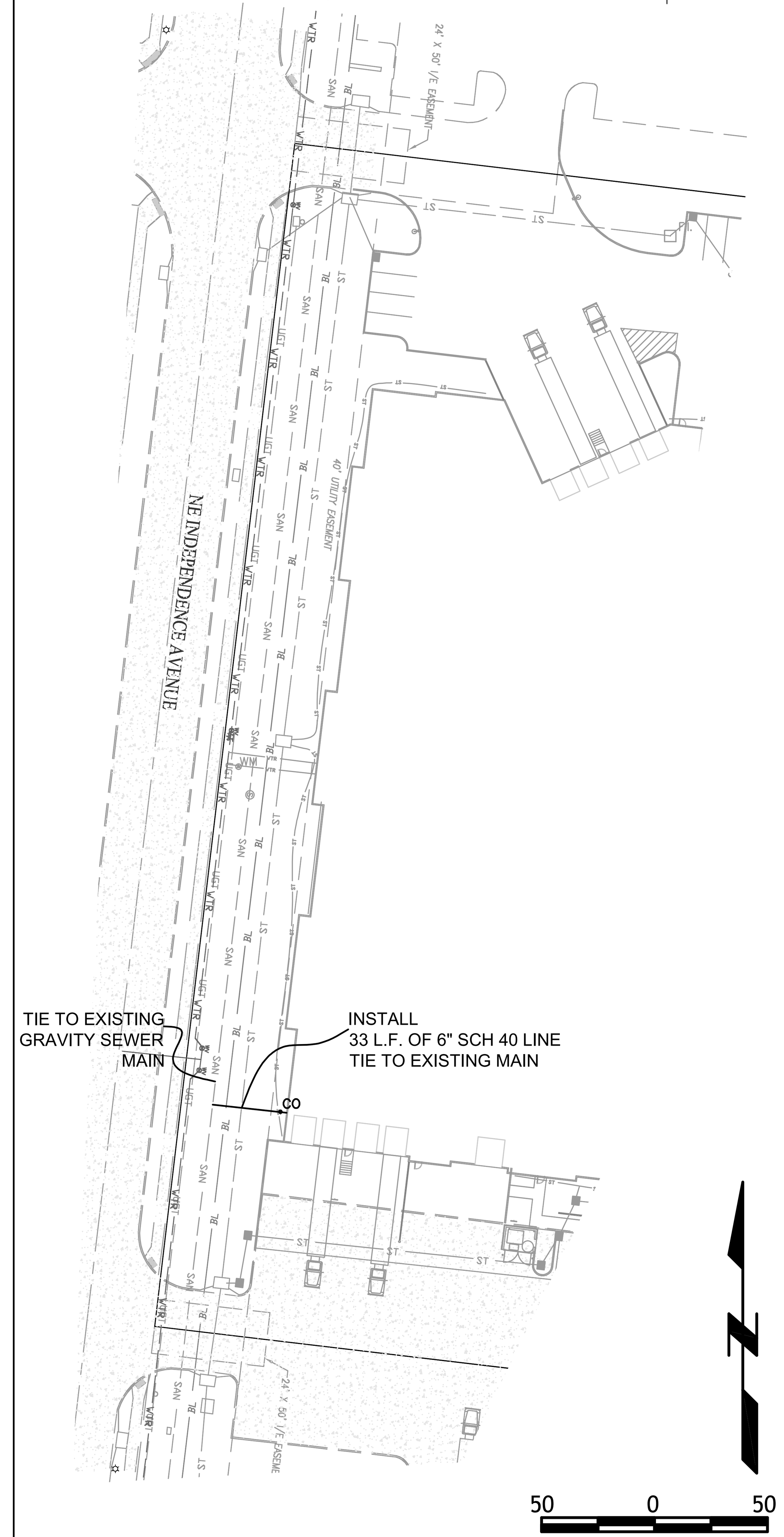


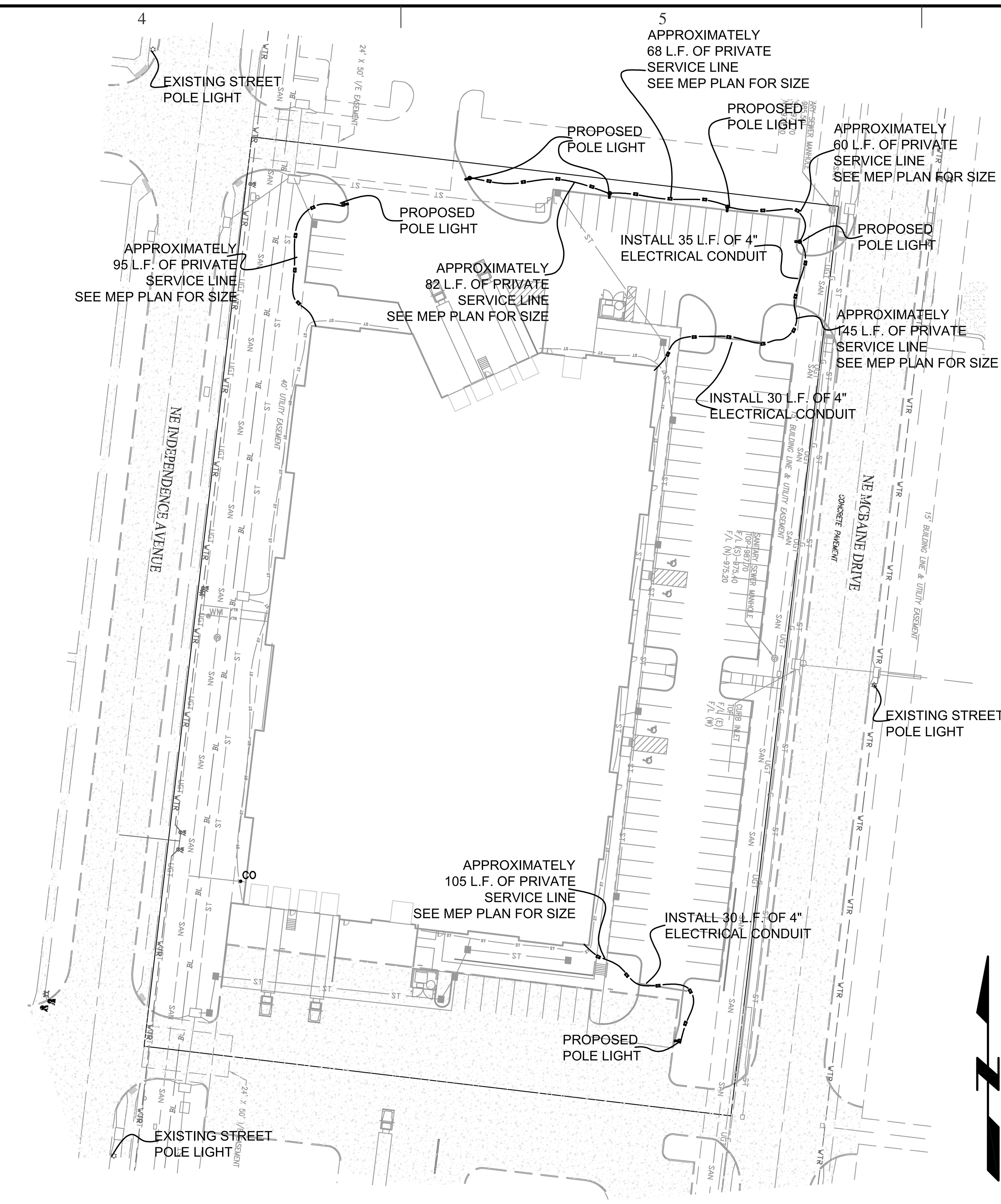
SITE WATER PLAN



GAS SERVICE PLAN



SITE SEWER PLAN



SITE ELECTRICAL PLAN

NOTE:
1. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY PRIOR TO CONSTRUCTION.

NOTE:
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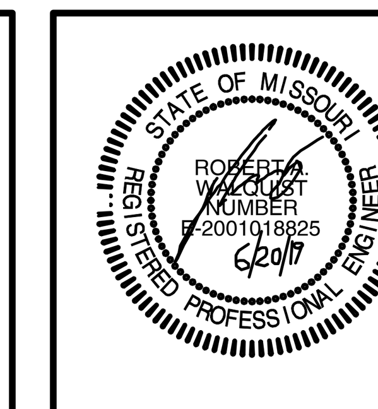
NOTE:
1. ENDS OF ALL CONDUITS SHALL BE MARKED WITH 4"X4" WOOD POST.
3. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY PRIOR TO CONSTRUCTION.
4. SHOP DRAWINGS FOR THE LIGHT POLES SHALL BE SUBMITTED AND APPROVED PRIOR TO CONSTRICTION.

LEGEND

- FIRE HYDRANT
- WATER VALVE
- WATER METER
- GAS METER
- GAS MARKER
- ● MANHOLE
- STREET LIGHT
- YARD LIGHT
- ▲ CABLE TV PEDESTAL
- ⊗ ELECTRIC TRANSFORMER
- TELEPHONE BOX
- POWER POLE
- POWER POLE W/TEL.
- ⊠ ELETRICAL PULL BOX
- POWER POLE W/STREET LIGHT
- △ ELETRICAL PULL BOX
- GROUND FLOOD LIGHT
- TRAFFIC SIGN

SITE UTILITY PLAN

I-470 LOT 13A
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI



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