

## UTILITIES

WATER & SANITARY SEWER City of Lee's Summit Water Utilities 220 SE Green St Lee's Summit, MO Phone:816.969.1900

ELECTRICITY Kansas City Power and Light Phone: 816.471.5275

GAS Missouri Gas Energy PO Box 219255 Kansas City, Missouri 64141 Phone: 816.756.5252

**TELEPHONE** AT&T Phone: 800.288.2020

Time Warner Cable Phone: 816.222.5952

CABLE TV Comcast Phone: 816.795.1100

Time Warner Cable Phone: 816.358.8833



All that part of Lots 1, 2, 3, 22, and 23, HEARNE'S ADDITION, a subdivision of land in the City of Lee's Summit, Jackson County, Missouri, together with all of vacated Orchard Street lying adjacent to said lots, being more particularly described as follows;

Commencing at the Northeast Corner of said Lot 3, HEARNE'S ADDITION, thence North 87°37'18" West, along the north line of said Lot 3, and also being along the south line of Lot 1, BENTON HEIGHTS, a subdivision of land in the City of Lee's Summit, Jackson County, Missouri, a distance of 150.00 feet to the Northwest Corner of the East 150 feet of said Lot 3 and being the True Point of Beginning of land being described;

thence continuing North 87°37'18" West, along said north line of lot 3, and along the north line of said Lots 2 and 1, of said HEARNE'S ADDITION, a distance of 362.30 feet to the Northwest Corner of said Lot 1, said point being on the easterly right-of-way line of the Union Pacific Railroad, as now exists;

thence southeasterly along the westerly line of said Lot 1 and said Lot 23, HEARNE'S ADDITION, and being along the easterly right-of-way line of said railroad, on a curve to the left, said curve having an initial tangent bearing of South 19°41'03" East, a chord which bears South 25°03'20" East, a radius of 2,814.79 feet, a chord distance of 527.00 feet, an arc length of 527.77 feet to a point 8 feet due north of and adjacent to the south line of said Lot 23;

thence South 87°40'20" East, along a line 8 feet due north of and adjacent to and parallel with the south line of said Lot 23 and said Lot 22, HEARNE'S ADDITION, a distance of 119.63 feet to the Southwest Corner of the North 80 feet of the South 88 feet of the East 150 feet of said Lot 22;

thence North 02°25'04" East, along the west line of the East 150 feet of said Lot 22, a distance of 80.00 feet to the Northwest Corner of the South 88 feet of the East 150 feet of said Lot 22;

thence South 87°40'20" East, 88 feet due north of and adjacent to and parallel with the south line of said Lot 22, a distance of 150.07 feet (measured) 150 feet (deed) to the Northeast Corner of the South 88 feet of said Lot 22;

thence North 02°20'22" East, along the east line of said Lots 22 and 3, HEARNE'S ADDITION, and also being along the westerly right-of-way line of Olive Street, as now exists, a distance of 317.50 feet to the Southeast Corner of the North 70 feet of said Lot 3;

thence North 87°37'18" West, along a line 70 feet due south of and adjacent to and parallel with the north line of said Lot 3, a distance of 150.00 feet to the Southwest Corner of the North 70 feet of the East 150 feet of said Lot 3;

thence North 02°20'22" East, along the west line of the East 150 feet of said Lot 3, a distance of 70.00 feet to the place of beginning;

Containing 164,714.19 square feet or 3.781 acres, more or less.

## **BENCHMARK:**

BM-A: 1.0 mi NW along the Missouri Pacific Railroad from the station at Lee's Summit, at the crossing of Sheer Road, 86 ft southeast of the center line of Sheer Road, 36 ft northeast of the northwest rail, 28.4 ft southeast of a telephone pole, 697 ft southwest of a fence, 1.8 ft west of a witness post, set in the top of a concrete post which projects 0.3 ft above the ground. Elev: 994.87

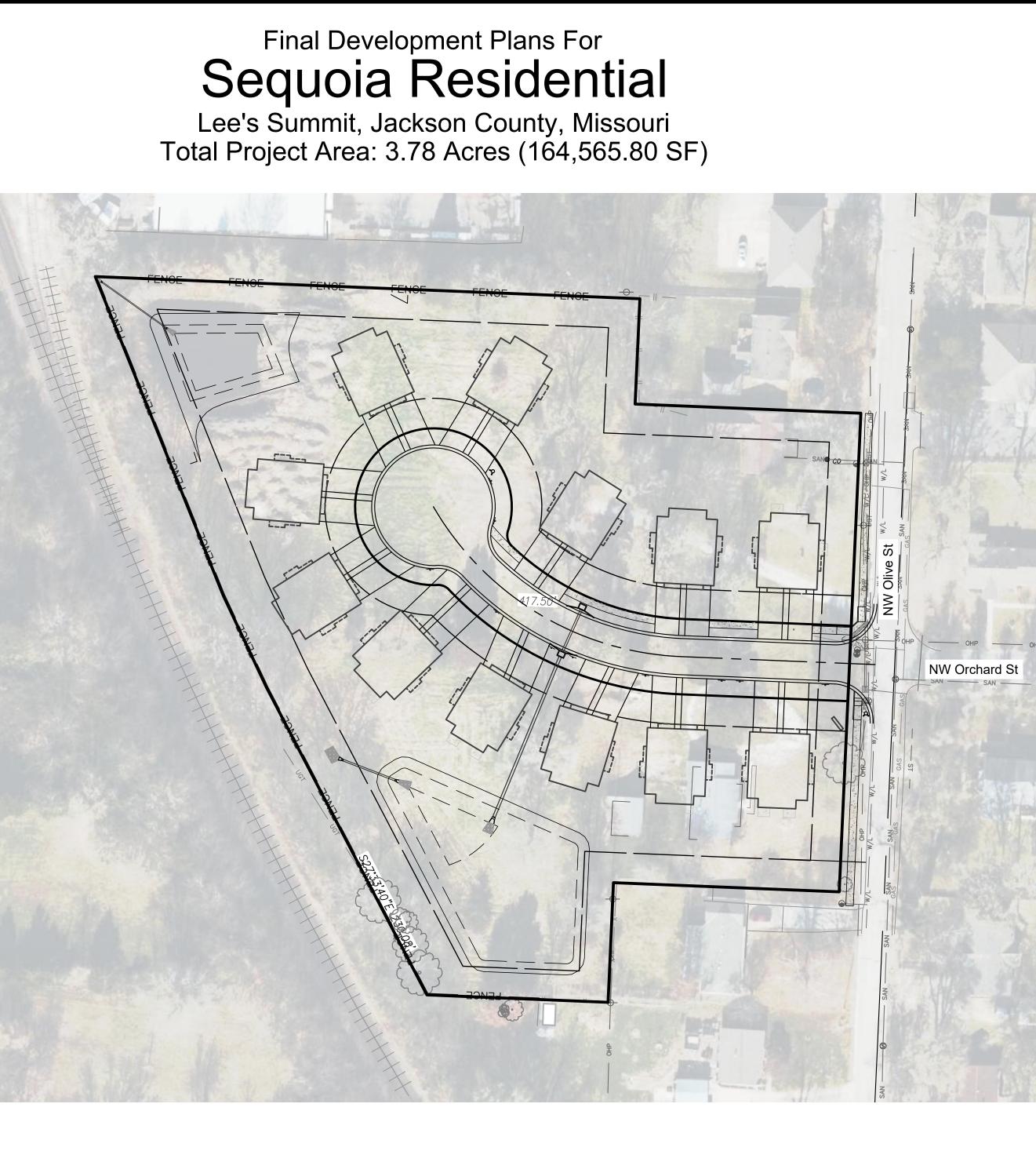
BM-B: 1.3 mi N along the Missouri Pacific Railroad from the station at Lee's Summit, Jackson County, at semaphore 2611, on the top of the concrete base, and 10 ft east of the track. A chiseled square. Elev: 971.80

## Oil / Gas Well Note:

There is no visible evident, this date, of abandoned oil or gas wells located within the property boundary, as identified in "Environmental Impact Study of Abandoned Oil and Gas Wells in Lee's Summit, Missouri." (Figure B-4, pg. 91)

## Flood Plain Note

We have reviewed the F.E.M.A. Flood Insurance Rate Map Number 29095C0417G, revised January 20, 2017, this tract graphically lies in OTHER AREAS, ZONE X, defined as areas determined to be outside the 0.2% annual chance floodplain.



## LEGEND

	Existing Section Line	— R/W —	Prop
	Existing Right-of-Way Line	P/L	Prop
	Existing Lot Line		Prop
	Existing Easement Line	U/E	Prop
	Existing Curb & Gutter		Prop
	Existing Sidewalk		Prop
	Existing Storm Sewer		Prop
	Existing Storm Structure		Prop
W/L	Existing Waterline	A	Prop
GAS	Existing Gas Main	WATER	Prop
SAN	Existing Sanitary Sewer	SS	Prop
S	Existing Sanitary Manhole	Ø	Prop
	Existing Contour Major		Prop
	Existing Contour Minor		Prop
	Proposed Asphaltic Pavement		Futu

Proposed Right-of-Way
Proposed Property Line
Proposed Lot Line
Proposed Easement
Proposed Curb & Gutter
Proposed Sidewalk
Proposed Storm Sewer
Proposed Storm Structure
Proposed Fire Hydrant
Proposed Waterline
Proposed Sanitary Sewer
Proposed Sanitary Manhole
Proposed Contour Major
Proposed Contour Minor
Future Curb & Gutter

## GENERAL NOTES

- 1. All construction shall follow the City of Lee's Summit Design and Construction the Final Development Plan and the Design and Construction Manual, the De 2. The contractor will be responsible for securing all bonds, and insurance requi
- governing agencies (including local, county, state, and federal authorities) ha The cost for all bonds, and insurance shall be the contractor's responsibility a
- 3. All existing utilities indicated on the drawings are according to the best inform be shown. The contractor shall be responsible for contacting all utility compa utilities, shown and un-shown, damaged through the negligence of the contra
- 4. The contractor will be responsible for all damages to existing utilities, paveme contractor shall repair all damages at his/her expense. 5. The demolition of existing pavement, curbs, structures, and all other features
- contractor. All waste material removed during construction shall be disposed hauling and disposing of waste material. The disposal of waste material shall
- 6. By use of these construction documents the contractor hereby agrees that he public. The contractor agrees to hold the engineer and owner harmless for a
- 7. The contractor will be responsible for providing all signage, barricades, lightin project. Maintenance of the temporary traffic control devices will be the contr right-of-way shall be in conformance with the City Traffic Control Requiremen
- Contractor shall furnish evidence that his/her insurance meets the requirement Prior to installing, constructing, or performing any work on the public storm se
- contact Lee Summit Inspections. 10. Connections to the public storm sewers between structures will not be permit
- 11. Contractor shall verify and accept existing topography shown herein. Contract activities.
- 12. Planning and Codes Administration will require a retaining wall design by a re
- 13. Geogrid, footings, or other elements of the retaining wall(s) cannot encroach into the right of way or public easements.
- 14. A Knox Box shall be provided for Each Building.

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	Sheet List Table	⊢					1
Sheet Number C01	Sheet Title Title Sheet						
C02	General Layout		_			uri	
C03	Existing Conditions & Demolition Plan					Missour	
C04	Site Dimension Plan	S				Mis	
C05 C06	Grading Plan Site Utility Plan	Final Developement Plans			le	ťζ,	
C07	Drainage Map & Calculations	т Б			Residentia	County	
C08	Storm Plan and Profile	en			der	S	
C09	Pond Plan	em		25,	esi		
C10	Erosion Control Phase I	do		8-0251	Ř	ackson	
C11 C12	Erosion Control Phase II Erostion Control Phase III	Ve		4	Sequoia	Jac	
C13	Standard Details	De			nbę	ŗ,	
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C18 C19	Standard Details					Ľ	
C20	Standard Details						
L01	Landscape Plan						
L02	Separate Schedules 1						
L03	Separate Schedules 2						
L04 L05	Landscape Notes & Details Planting Specifications						
L06	Lawn Specifications			ŗ			
L07	Irrigation Specifications			Jee			
				Title Sheet			
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				F			
	APPLICATION/OWNER:						
	Dick Burton Dick Burton Dick Burton						
	8 SW AA Highway						
	Kingsville, MO 64061 daburton@mail.com						
	<u>CIVIL ENGINEER:</u> Mick Slutter, P.E.						
	1815 McGee St, #200						
	Kansas City, MO 64116 mslutter@ric-consult.com					NO	
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	LANDSCAPE ARCHITECT: Andy Gabbert, PLA					ORIGINAL SUBMISSION REVISION	
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1"=50'	Riverside, MO 64150 agabbert@ric-consult.com						
25' 50'							
						2020 TF	-
						05/08/2020 DATE	i
on Manual as adopted by Ordi	nance 5813. Where discrepancies exist between					0D OD	
Design and Construction Manu	al shall govern. ts, City of Lee's Summit, Mo., and all other					JGD BY	-
aving jurisdiction over the wor	k proposed by these construction documents.					- Q	
and shall be included in the bi mation available to the engine	d for the work. er; however, all utilities actually existing may not	ക	٦ ل	_		0950 T.COM	
anies for an exact field locatio	n of each utility prior to any construction. All	JC		<u>ן</u>	50	.800.	
	aced by the contractor at his/her expense. ther features not designated for removal. The	Ŋ		ן ( ד {		816.800.0950 www.ric-consult.com	
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•	roposed improvements, shall be performed by the tractor shall be responsible for all permits for	<u>ק</u>	Й П	יי ז ל	M		0100
	cal, state, and federal regulations. or the safety of the construction workers and the		ر لولد:			200 38	Ц
•	sses, or damages related to the project.			<u> </u>		UITE. 1 64 ((	prity:
•	brary traffic control during the construction of this fic control in conduction with construction in the				-	REET, SUI MISSOURI	Autho
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ents of the City of Lee's Summ sewer line (including connectin	nit, Missouri Municipal Code. g private drainage systems to the storm sewer),		V			MCGEE SAS CITY	
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itted. actor shall notify Engineer if an	y discrepancies are found prior to any earthwork					≝ ¥.	
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registered engineer in the Stat n into the right of way or public			MI	ICHELL LUTTE	R		
		<b>-4</b> (	A.	11h	Contraction	5 E	

15. All building and life safety issues shall comply with the 2012 International Fire Code and local amendments as adopted by the City of Lee's Summit.

PE-2002003418 

Sheet

### FOR NON-PUBLIC WORK

- Screened items indicate a pre-construction topographic survey
- Contraction joints shall conform to APWA Section 2200. All concrete to be 4000 psi with 6% (+/- 1%) air entrainment. Cement mixtures with water/cement
- ratios at 0.5 or below are recommended Construction of reinforced concrete pavements shall be in accordance with ACI 330 standard D.
- specifications.
- Curing compound to be applied to all concrete surfaces immediately after broom finish. Contractor shall reject concrete if it cannot be placed within 90 minutes of batch time. Expiration time shall be reduced to 60 minutes on high summer temperatures.

PAVEMENT MARKING AND SIGNAGE NOTES

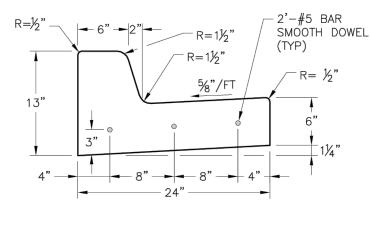
- Parking stall marking stripes shall be four inch (4") wide white stripes. Handicap stall marking shall be furnished at locations shown on plans.
- 2. Traffic control devices and pavement markings shall conform to the requirements of the "Manual of Uniform Traffic Control Devices" and to the City of Lee's Summit.
- . Traffic control and pavement markings shall be painted with a white Sherwin Williams S-W traffic marking series b-29y2 or approved equal. The pavement marking shall be applied in accordance with manufacturers recommendations. Apply on a clean, dry surface and at a surface temperature of not less than 70°f and the ambient air temperature shall not be less than 60°f and rising. Two coats shall be applied.

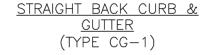
4. All pavement markings for handicap stalls and aisles shall be blue.

- LAYOUT & PAVING NOTES
- All construction shall conform to the City of Lee's Summit's minimum design standards.
- 2. The contractor shall check existing grades, dimensions, and inverts in the field and report any discrepancies to the architect/engineer prior to beginning work. 3. The contractor shall verify the exact location of all existing utilities, take care to protect utilities that are to remain, and
- repair contractor caused damage according to current local standards and at the contractor's expense. Coordinate all construction with the appropriate utility company.
- 4. The contractor shall comply with all local codes, obtain all permits, and pay all fees prior to beginning work. 5. Prior to installing, constructing, or performing any work in the public right of way or on the public storm sewer line (including concrete pavement or connecting private drainage systems to the storm sewer), contact City of Lee's Summit public works at 816.969.1800 for inspection of the work. Contact must be made at least 24 hours prior to start
- of the work. 6. Provide a smooth transition between existing pavement and new pavement. Field adjustment of final grades may be necessary. Adjust all utilities prior to installation of pavement.
- 7. The contractor shall protect all trees to remain, in accordance with the specifications. Do not operate or store heavy equipment, nor handle, nor store materials within the driplines of trees or outside the limit of grading.
- 8. Concrete walks and pads shall have a broom finish. All concrete shall be 4,000 p.s.i. unless otherwise noted. Curb ramps, sidewalk slopes, and driveway ramps shall be constructed in accordance with all current local requirements. If applicable, the contractor shall request inspection of sidewalk and ramp forms prior to placement of concrete. 9. All damage to existing asphalt pavement to remain which results from new construction shall be replaced with like
- materials at contractor's expense.
- 10. Dimensions are to the back of curb, or edge of concrete, unless otherwise noted. 11. Excess material shall be disposed of by the contractor off the owner's property at no additional cost in a legal manner.
- 12. Maintain one set of as-built drawings on the job site for distribution to the engineer upon completion.
- 13. Concrete curb at all all concrete paving and both side of drive-in ramps shall be integral. 14. Contractor shall be responsible for mud and debris on public ROW which shall be removed in a timely manner daily.
- GENERAL NOTES
- 1. All fencing constructed adjacent to PI zoning districts shall conform to City of Lee's Summit UDO Section 8.890 minimum buffer screen requirements.
- 2. Pavement sections shall conform to the City of Lee's Summit minimum design standards.

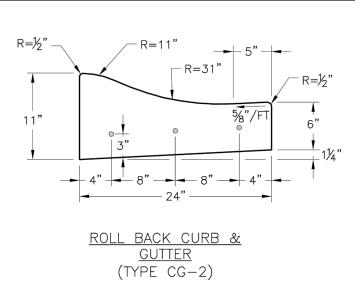
SITE DATA TABLE

PROPERTY INFO: Existing Zoning: Total Land Area: Proposed Street Right-of-way: Net Land Area: Proposed Use:	RP-2 Planned Two-Family Residential 3.78 Acres, 164,656.80 sqft 0.69 Acres, 30,056.40 sqft 3.78 Acres, 164,656.80 sqft RP-2 Planned Two-Family Residential
BUILDING INFO: Building 1-12: Number of Dwelling Units:	Type A - (2 / 2 - 24 Units) 24
PARKING INFO: 1 or 2 Bedroom Residence: 2 Stalls / 1-2 BR Unit Total Parking Required Surface Stalls Provided Driveway Parking Stalls Provide Attached Garage Stalls Provide	•
Total Parking Provided	= 96 Spaces
ADA Parking Required	= 4 Spaces
ADA Parking Provided	= 0 Spaces
Total Floor Area	= 25,320 SF
Total Impervious Area	= 61,320 SF (37.24%)
Floor Area Ration (FAR)	= 0.13
Dwelling (Units) Per Acre	= 6.35
Total Building Height	= 28.0 ft





City of Lee's Summit Standard Details - GEN 4 Straight Back Dry Curb & Gutter (Type CG-1 Dry)





City of Lee's Summit Standard Details - GEN 4 Roll Back Dry Curb & Gutter (Type CG-2 Dry)

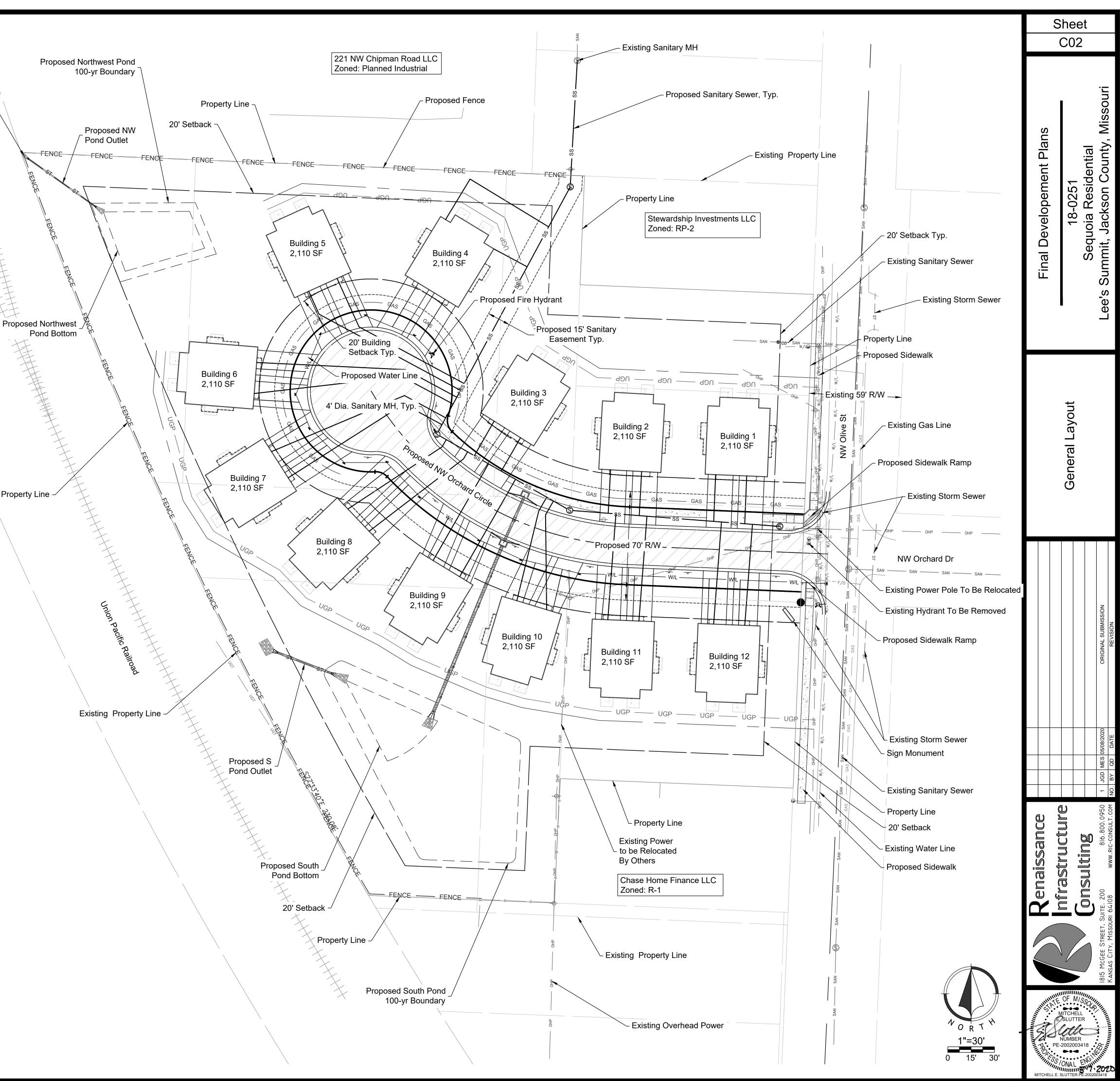
Property Line -

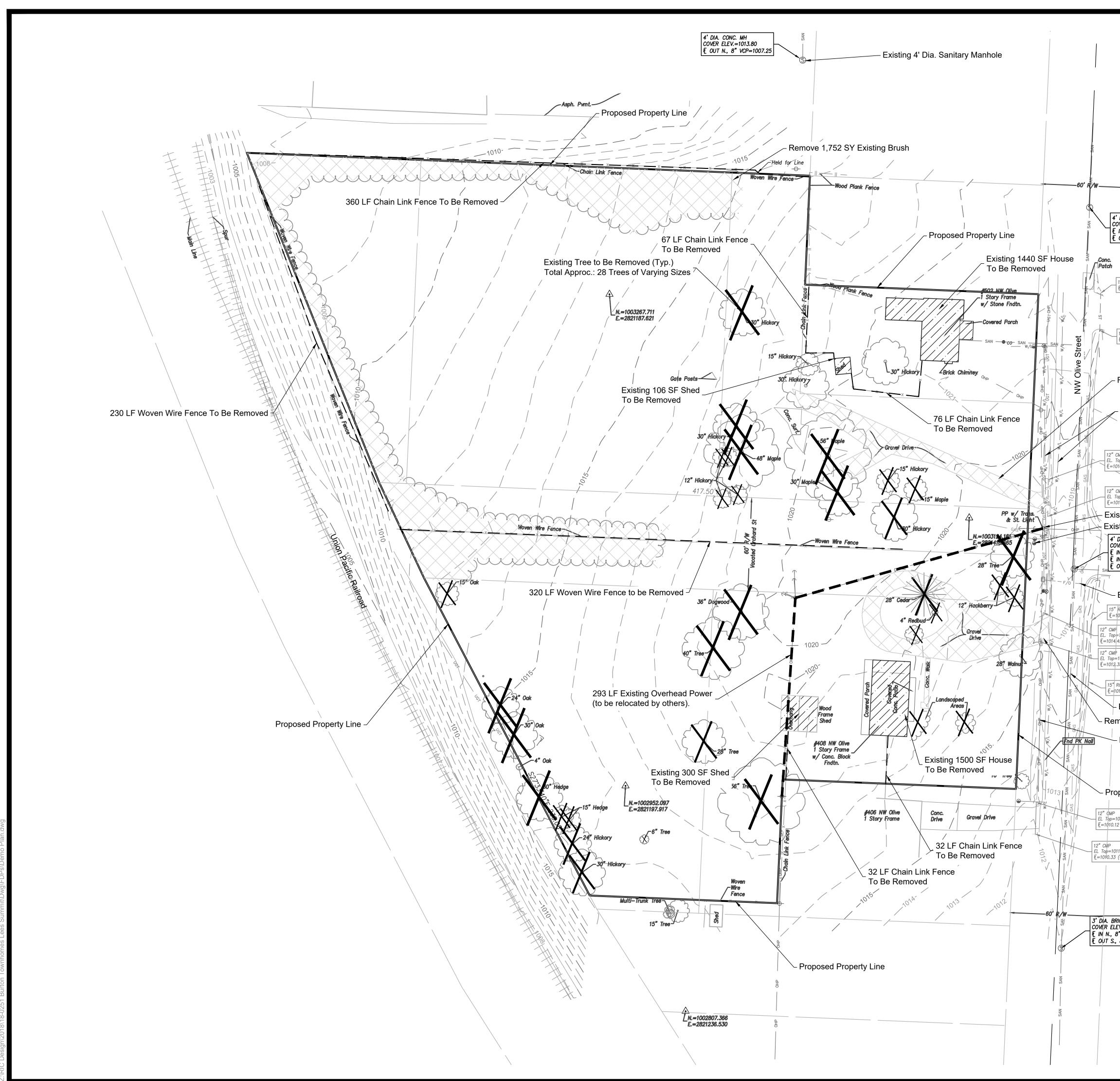
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Contractor to Leave

Gap at Bottom of Fence ¬

to Allow for Storm Drainage

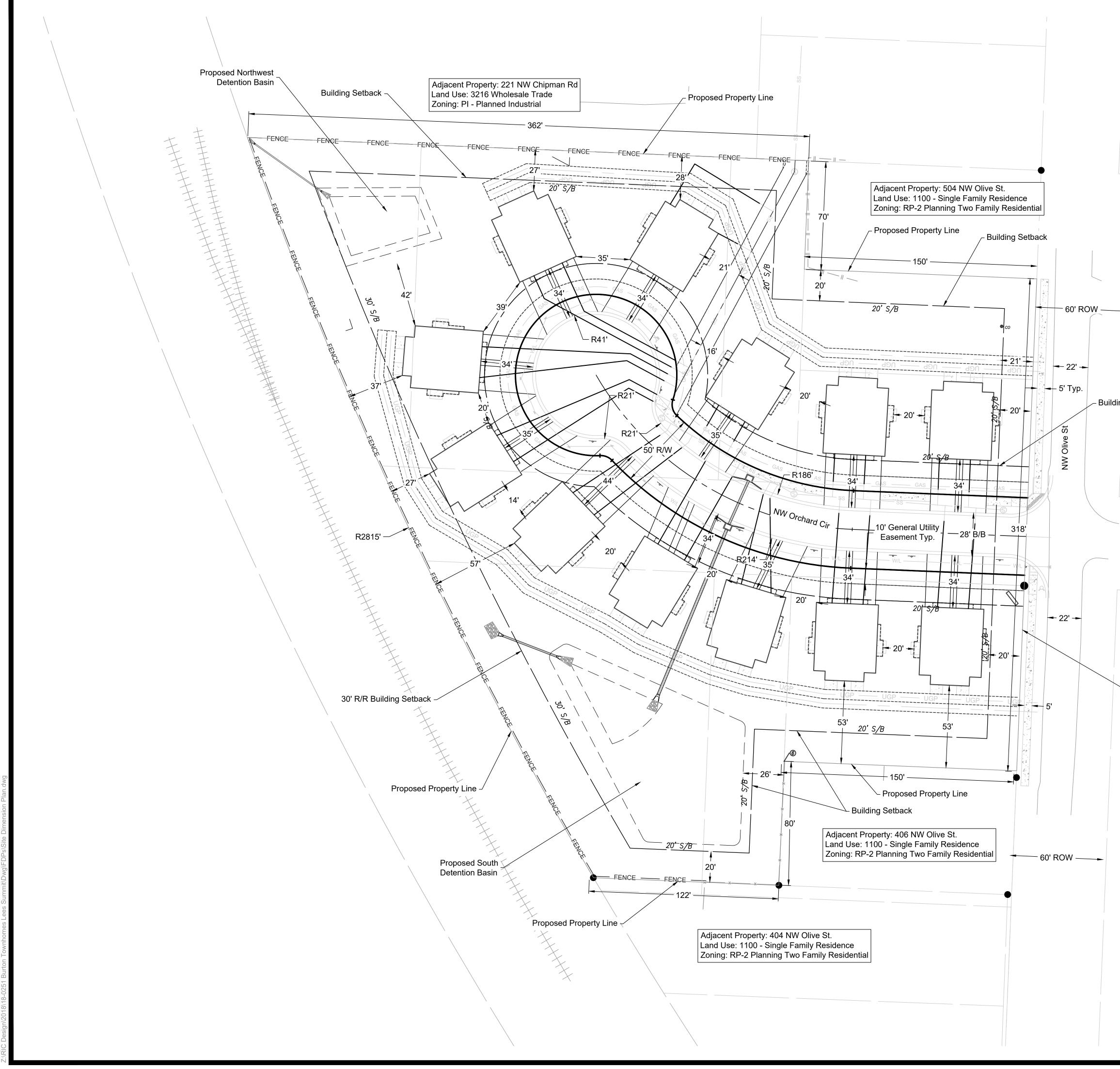




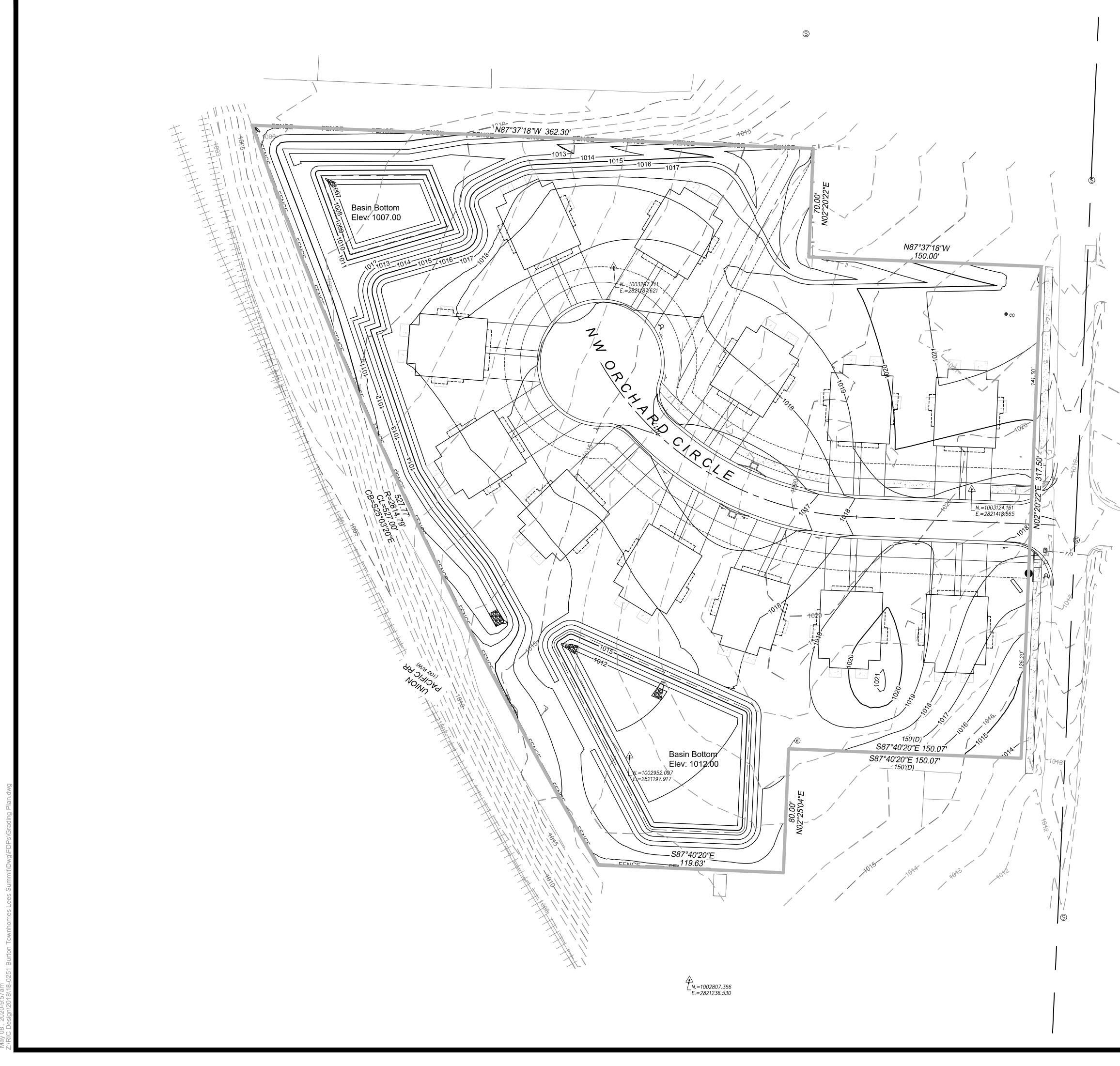
			Sheet C03	
4' DIA. CONC. BLOCK MH COVER ELEV.=1022.94 ℓ IN N., 8' VCP=1016.29 ℓ OUT SI, 8' VCP=1016.24 12" RCP ℓ=1029.33 12" RCP ℓ=1019.83		Final Developement Plans	18-0251 Sequoia Residential	Lee's Summit, Jackson County, Missouri
- Remove 260 SY Existing Gravel Drive - Existing Water Line - Existing Vater Line - Comp - Top=1017.39 - Top=1018.23 - 1017 23 (Calc'd) - Kisting Power Pole To Be Removed			Existing Conditions & Demolition Plan	
NW Orchard Street NW Orchard Street NW Orchard Street NW Orchard Street NW Orchard Street NW Orchard Street SAN SAN SAN SAN SAN SAN SAN SAN SAN SAN				ORIGINAL SUBMISSION REVISION
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0 15' 30'

MITCHELL E. SLU

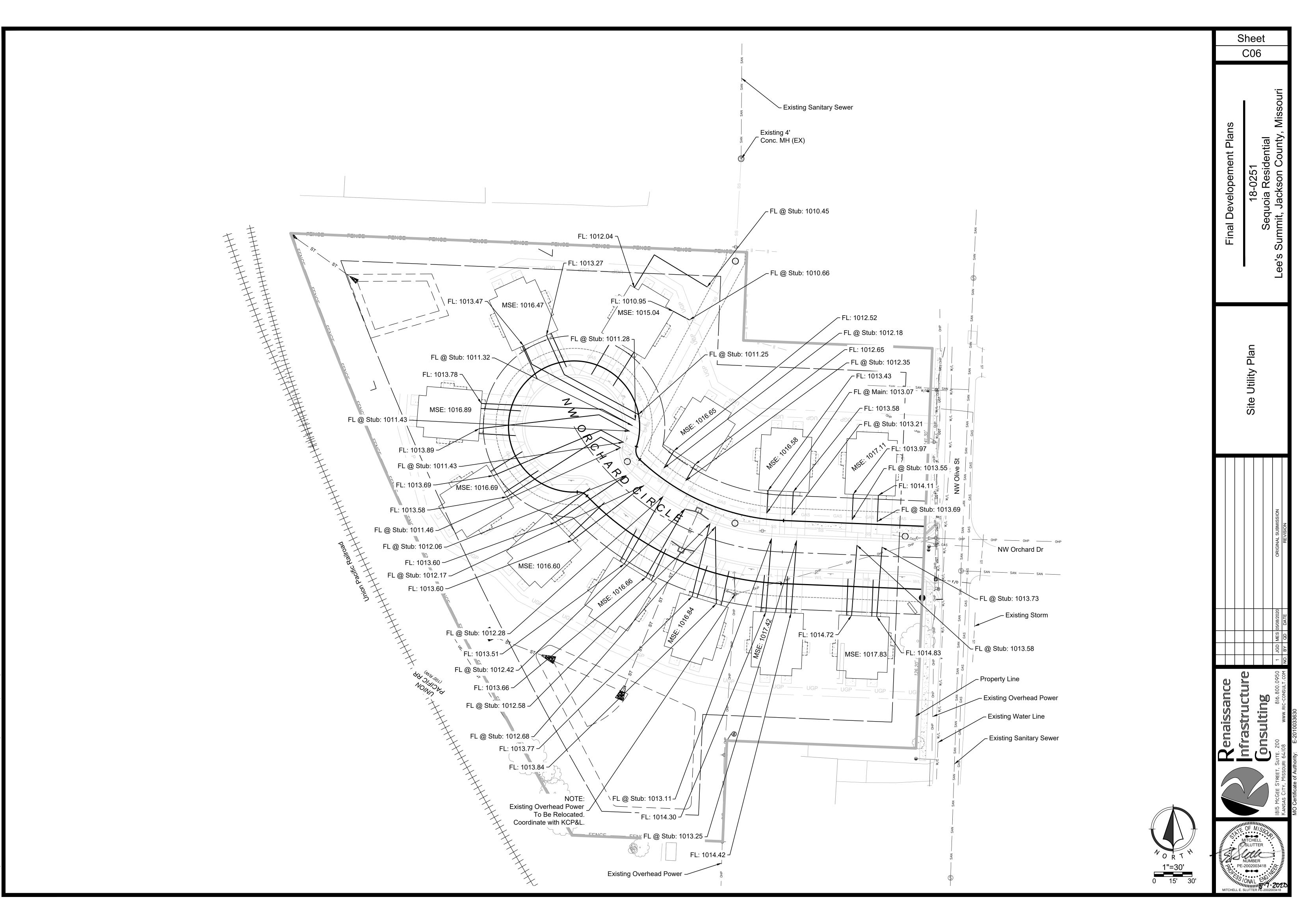


		S	heet C04	
		Final Developement Plans	18-0251 Securoia Residential	Lee's Summit, Jackson County, Missouri
ing Setback			Site Dimension Plan	
NW Orchard Dr				ORIGINAL SUBMISSION REVISION
Proposed Property Line		aissance	onsulting	816.800.0950 1 JGD MES 05/08/2020 WWW.RIC-CONSULT.COM NO. BY QD DATE
Note: See Public Improvement Plans For Construction Details of Public Street, Storm, and Utilities	1''=30' 0 15' 30'		OF M/SSO AITCHELL SLUTTER AUMBER 2002003418	1815 MCGEE STREET, SUITI KANSAS CITY, MISSOURI 6.



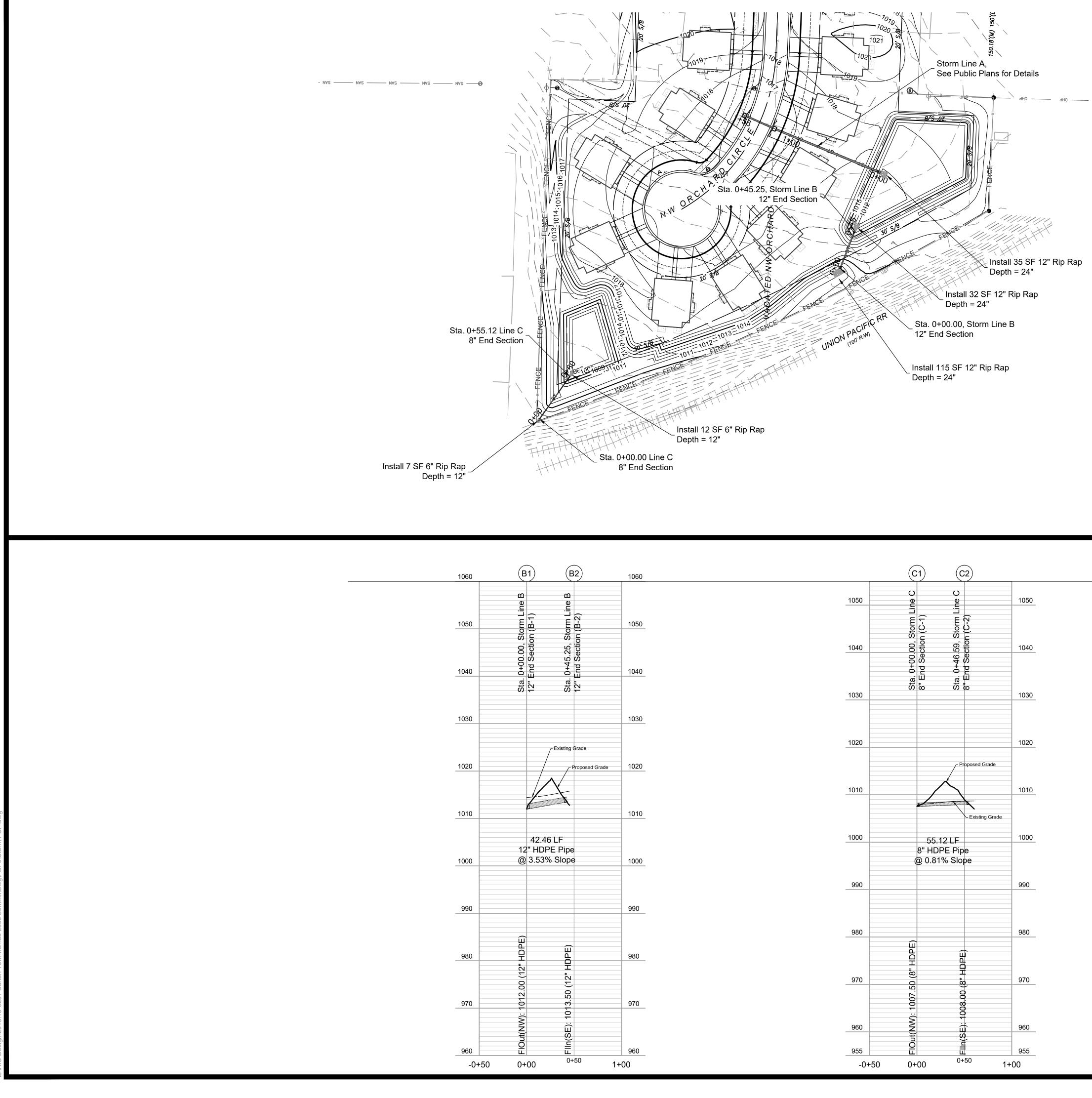
			Sheet C05
		Final Developement Plans	18-0251 Sequoia Residential Lee's Summit, Jackson County, Missouri
			Grading Plan
NW Orchard Dr			2020 ORIGINAL SUBMISSION E REVISION
			Intrastructure for stretch IBI5 McGEE STREET, SUITE. 200 IBI5 McGEE STREET, SUITE. 200 IBI5 McGEE STREET, SUITE. 200 BI6.800.0950 BI6.800.0950 IBI5 McGEE STREET, SUITE. 200 BI6.800.0950 IBI5 McGEE STREET, SUITE. 200 BI7 MCGEI ST
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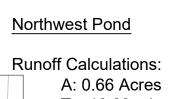
		Pipe Design																
sity	System	U/S	D/S	Pipe	Pipe	Pipe	Pipe	Mannings	Pipe	Design	Pipe	Full Flow	Design	Depth of	Flow	U/S	U/S	
	Discharge	Node	Node	Туре	Shape	Diameter	Length	"n" value	Slope	Flow	Capacity	Velocity	Flow	Flow	Time	Invert EI.	Crown El.	In
r.)	(cfs)					(in.)	(ft.)		(%)	(cfs)	(cfs)	(fps)	Velocity	(in.)	(min.)			
													(fps)					
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5	7.69	A-1	0	HDPE	Round	18	121.61	0.01	0.51	7.69	9.72	5.50	6.10	12.1	0.33	1012.62	1014.12	1(
2	12.26		Ŭ	TIDI E	rtourid	10	121.01	0.01	0.01	12.26	0.12	0.00	5.50	18.0	0.37	1012.02	1011.12	



	Sheet C08	
	Final Developement Plans 18-0251 Sequoia Residential Lee's Summit, Jackson County, Missouri	
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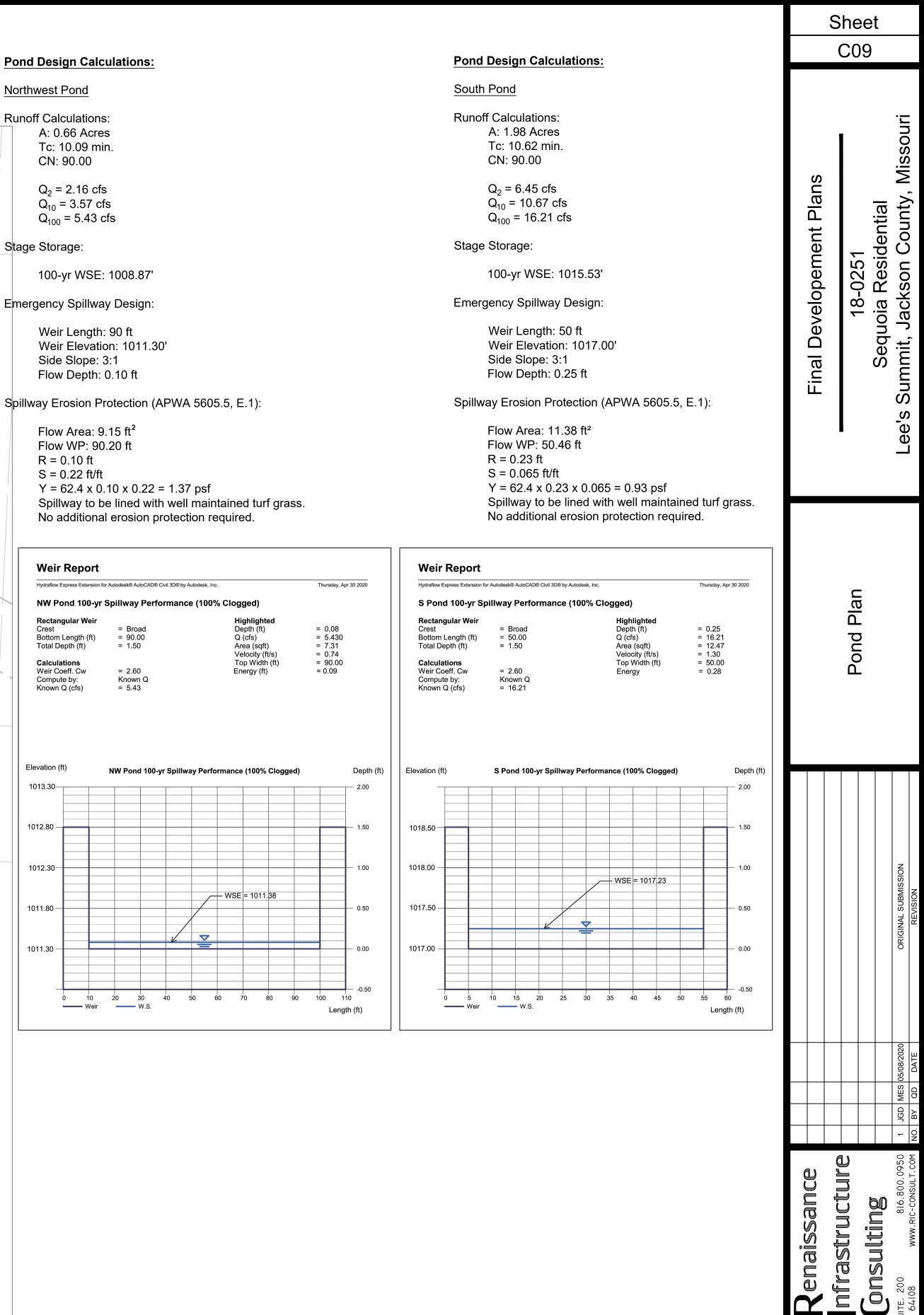


## Pond Design Calculations:



Emergency Spillway Design:

R = 0.10 ft





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Limits Of Disturbance For Site Construction

3

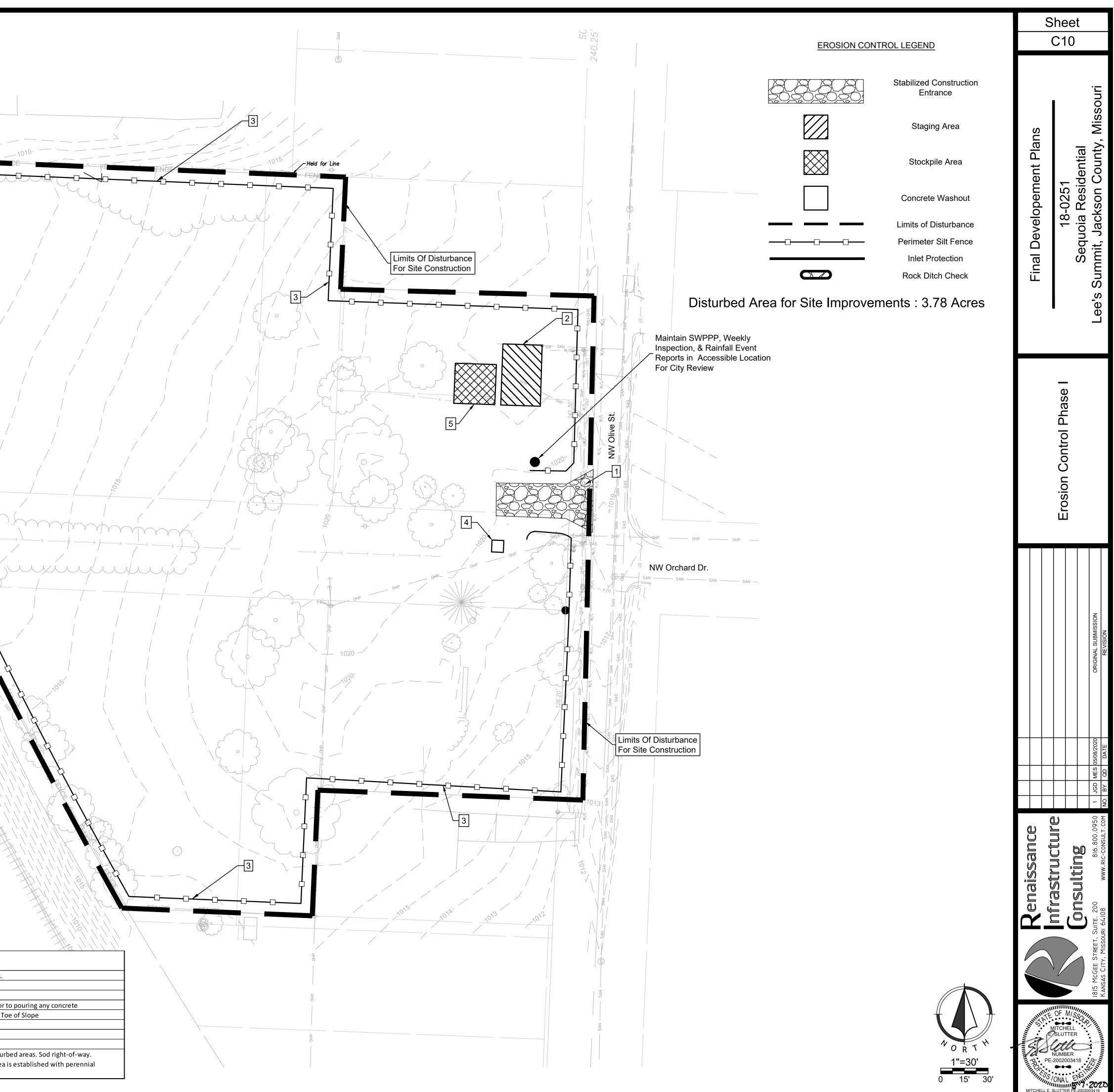
## WRITTEN SEQUENCING

- Implement Pre-Clearing Plan: All temporary structural BMP's shown on the pre-clearing plan must be in place before the general clearing operations. Clearing necessary to place temporary structural BMP's is the minimum required for installation. Coordinate clearing necessary to place temporary structural BMP's with local weather forecast so that clearing and placement may be completed within a forecast dry period. Stabilize all erosion control measures after installation. Temporary Barrier Fence shall be in Place, around areas not to be disturbed, prior to any construction activities. This area includes Stream Corridor.
- <u>Clear and Stabilize Work Areas:</u> Grade contractor areas and place all-weather surface on contractor areas.
- <u>Clearing and Grubbing:</u>
   After Phase I BMP's are installed, contractor may clear, grub, and demo required areas as necessary.

## EROSION CONTROL NOTES

- 1. Erosion control plan modifications shall be required if the plan
- fails to substantially control erosion and offsite sedimentation.
- 2. The retention of access controls and sediment controls shall be required for areas where seed has not established 70% cover.
- 3. The contractor shall temporarily seed and mulch all disturbed areas if there has been no construction activity on them for a
- period of fourteen (14) calendar days.4. Install "J' Hooks on silt fence every 100 LF

Phases	Project Stage	BMP Plan Ref. No.	BMP Description	Remove After Stage	Notes
		1	Stabilized Construction Entrance	С	Install Construction Entrance, as shown on Plans.
Phase I	A- Prior to Land Disturbance	2	Staging Area	С	Install Staging Area
Phase I	A- Prior to Land Disturbance	3	Perimeter Silt Fence	С	Install Perimeter Silt Fence, as Shown on Plans.
		4	Concrete Washout	С	Install Concrete Washout as shown on plans prior to pourir
	B- Mass Grading	5	Stockpile Topsoil	D	Install Sediment Fence a Minimum of 5' Beyond Toe of Slo
Phase II		6	Sediment Fence	D	Install Sediment Fence, as Shown on Plans
Flidsell	C - Site Construction	7	Curb Inlet Protection	D	Install Filter Bags around Proposed Curb Inlets
		8	Rock Ditch Check	D	Install Rock Ditch Check, as Shown on Plans
					Redistribute topsoil and seed and mulch all disturbed area
Phase III	D - Final Stabilization	9	Establish Perennial Vegetation	N/A	Stabilization complete when 100% disturbed area is establ
					vegetation with a density of 70%.



## Limits Of Disturbance For Site Construction

- \_ \_ F

3

44 31413 42 17113 42

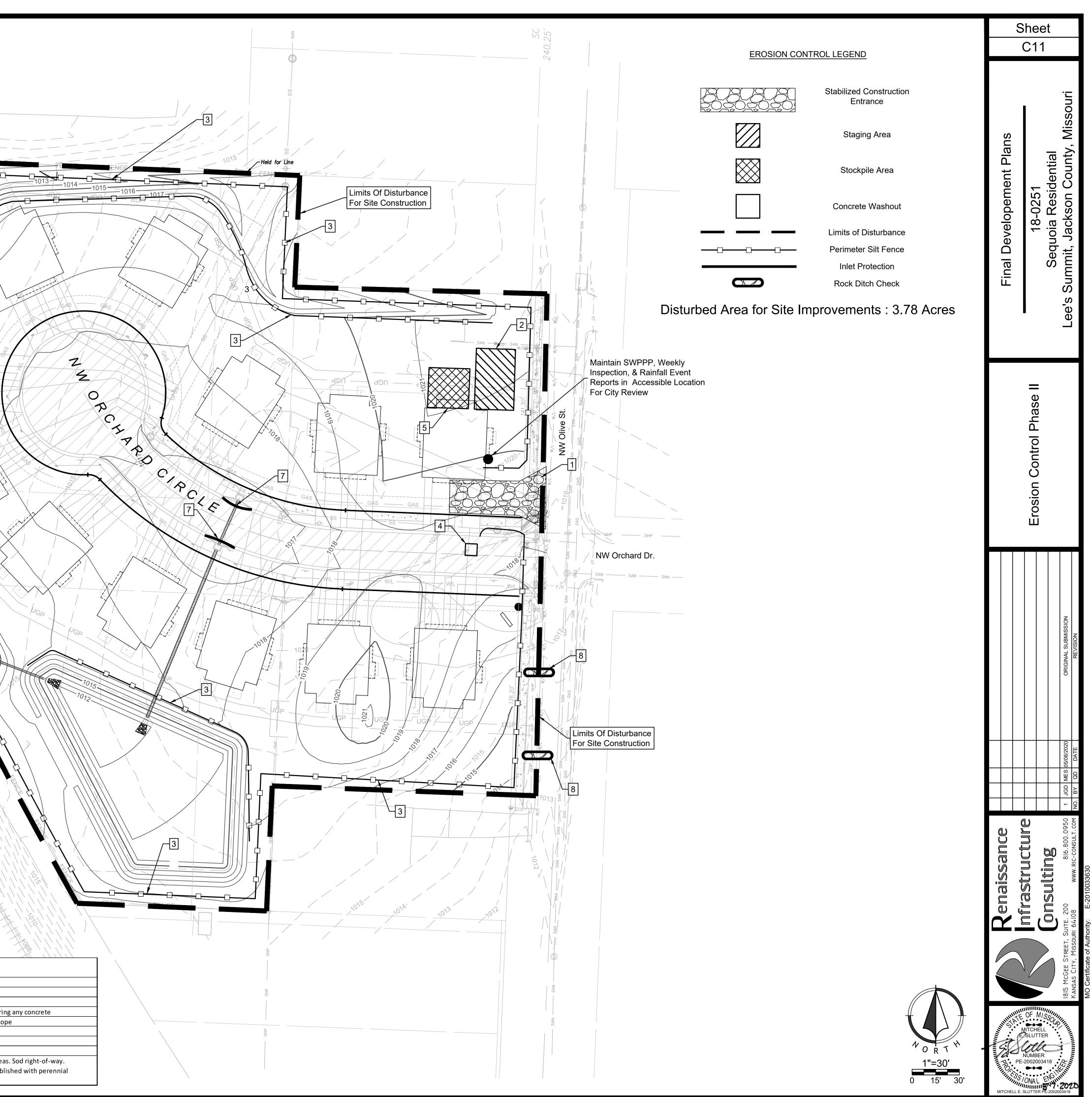
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Phases	Project Stage	BMP Plan Ref. No.	<b>BMP</b> Description	Remove After Stage	Notes
		1	Stabilized Construction Entrance	С	Install Construction Entrance, as shown on Plans.
Phase I	A- Prior to Land Disturbance	2	Staging Area	С	Install Staging Area
Flidsel	A- FIIOI to Land Disturbance	3	Perimeter Silt Fence	С	Install Perimeter Silt Fence, as Shown on Plans.
		4	Concrete Washout	С	Install Concrete Washout as shown on plans prior to pourin
	B- Mass Grading	5	Stockpile Topsoil	D	Install Sediment Fence a Minimum of 5' Beyond Toe of Slop
Phase II		6	Sediment Fence	D	Install Sediment Fence, as Shown on Plans
Fildse II	C - Site Construction	7	Curb Inlet Protection	D	Install Filter Bags around Proposed Curb Inlets
		8	Rock Ditch Check	D	Install Rock Ditch Check, as Shown on Plans
					Redistribute topsoil and seed and mulch all disturbed areas
Phase III	D - Final Stabilization	9	Establish Perennial Vegetation	N/A	Stabilization complete when 100% disturbed area is establi
					vegetation with a density of 70%.



WRITTEN SEQUENCING

- 1. Implement Pre-Clearing Plan:
- All temporary structural BMP's shown on the pre-clearing plan must be in place before the general clearing operations. Clearing necessary to place temporary structural BMP's is the minimum required for installation. Coordinate clearing necessary to place temporary structural BMP's with local weather forecast so that clearing and placement may be completed within a forecast dry period. Stabilize all erosion control measures after installation. Temporary Barrier Fence shall be in Place, around areas not to be disturbed, prior to any construction activities. This area includes Stream Corridor.

4 31 31 3 b

- <u>Clear and Stabilize Work Areas:</u> Grade contractor areas and place all-weather surface on contractor areas. 3. <u>Clearing and Grubbing:</u>
- After Phase I BMP's are installed, contractor may clear, grub, and demo required areas as necessary.

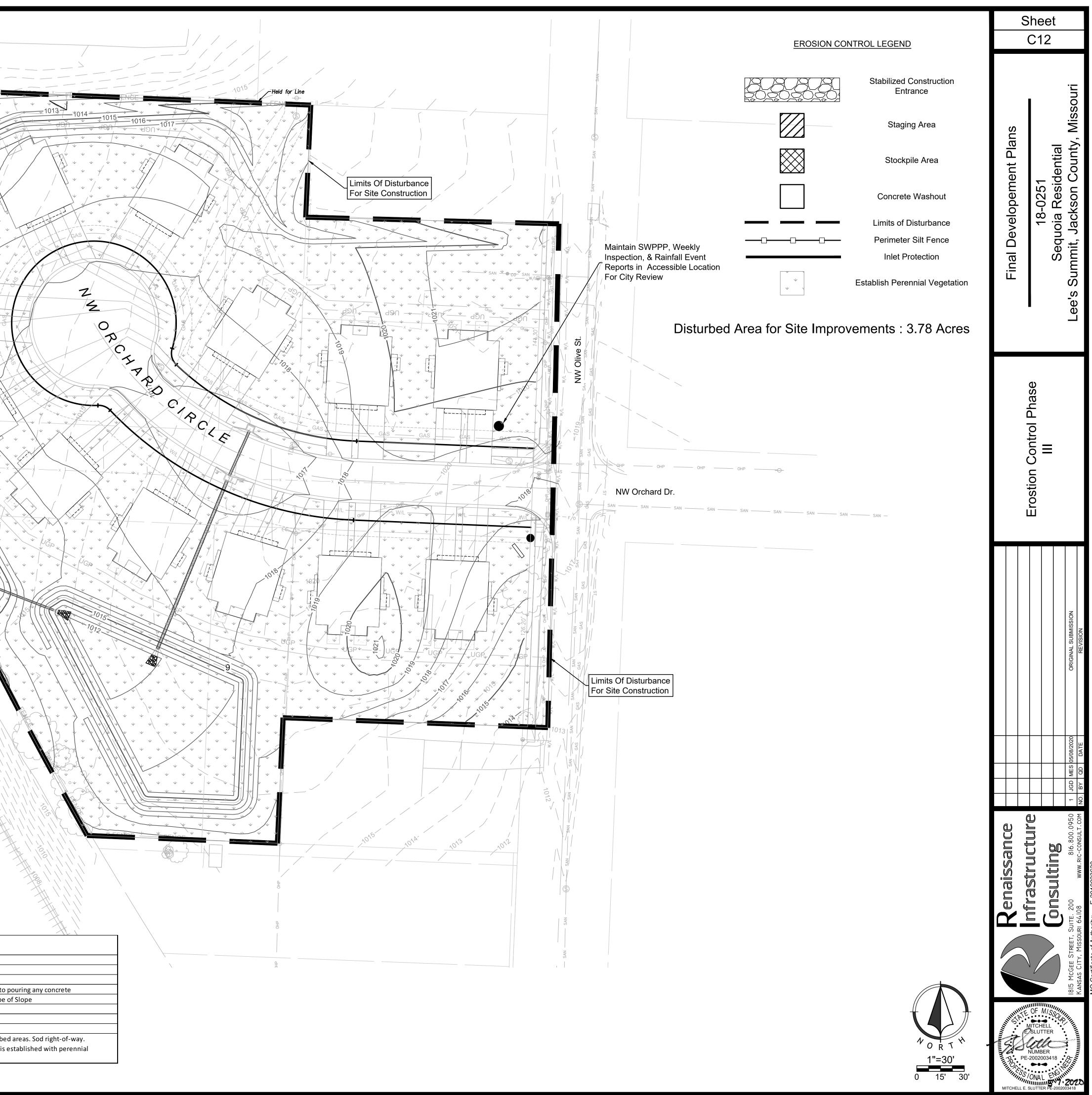
## EROSION CONTROL NOTES

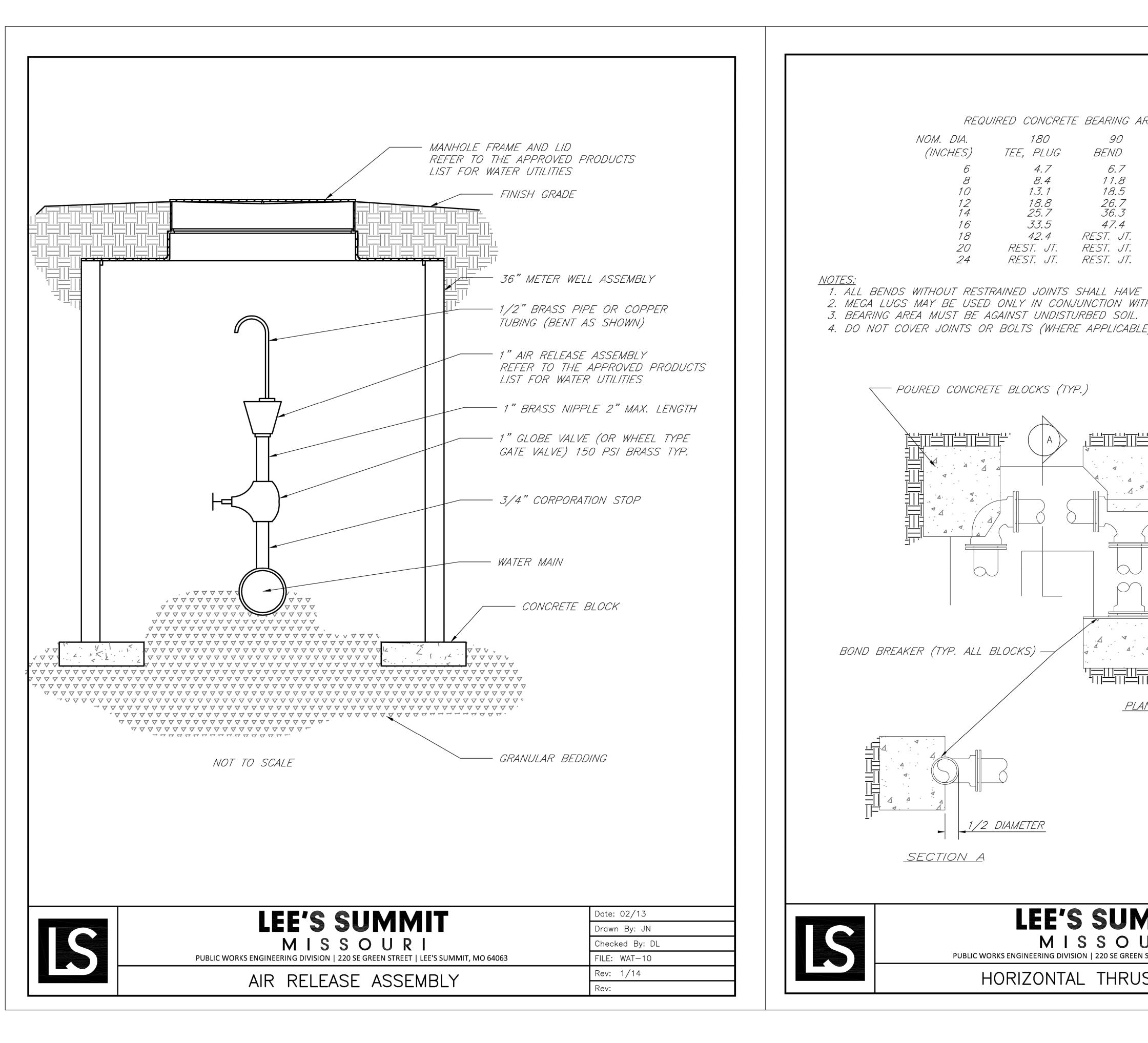
1. Erosion control plan modifications shall be required if the plan

Limits Of Disturbance For Site Construction

- fails to substantially control erosion and offsite sedimentation. 2. The retention of access controls and sediment controls shall be
- required for areas where seed has not established 70% cover. 3. The contractor shall temporarily seed and mulch all disturbed
- areas if there has been no construction activity on them for a period of fourteen (14) calendar days. 4. Install "J' Hooks on silt fence every 100 LF

Phases	Project Stage	BMP Plan Ref. No.	BMP Description	Remove After Stage	Notes
		1	Stabilized Construction Entrance	С	Install Construction Entrance, as shown on Plans.
Phase I	A- Prior to Land Disturbance	2	Staging Area	С	Install Staging Area
Pliasel	e I A- Prior to Land Disturbance	3	Perimeter Silt Fence	С	Install Perimeter Silt Fence, as Shown on Plans.
		4	Concrete Washout	С	Install Concrete Washout as shown on plans prior to p
	B- Mass Grading	5	Stockpile Topsoil	D	Install Sediment Fence a Minimum of 5' Beyond Toe o
Phase II		6	Sediment Fence	D	Install Sediment Fence, as Shown on Plans
r nase n	C - Site Construction	7	Curb Inlet Protection	D	Install Filter Bags around Proposed Curb Inlets
		8	Rock Ditch Check	D	Install Rock Ditch Check, as Shown on Plans
					Redistribute topsoil and seed and mulch all disturbed
Phase III	D - Final Stabilization	9	Establish Perennial Vegetation	N/A	Stabilization complete when 100% disturbed area is e
					vegetation with a density of 70%.

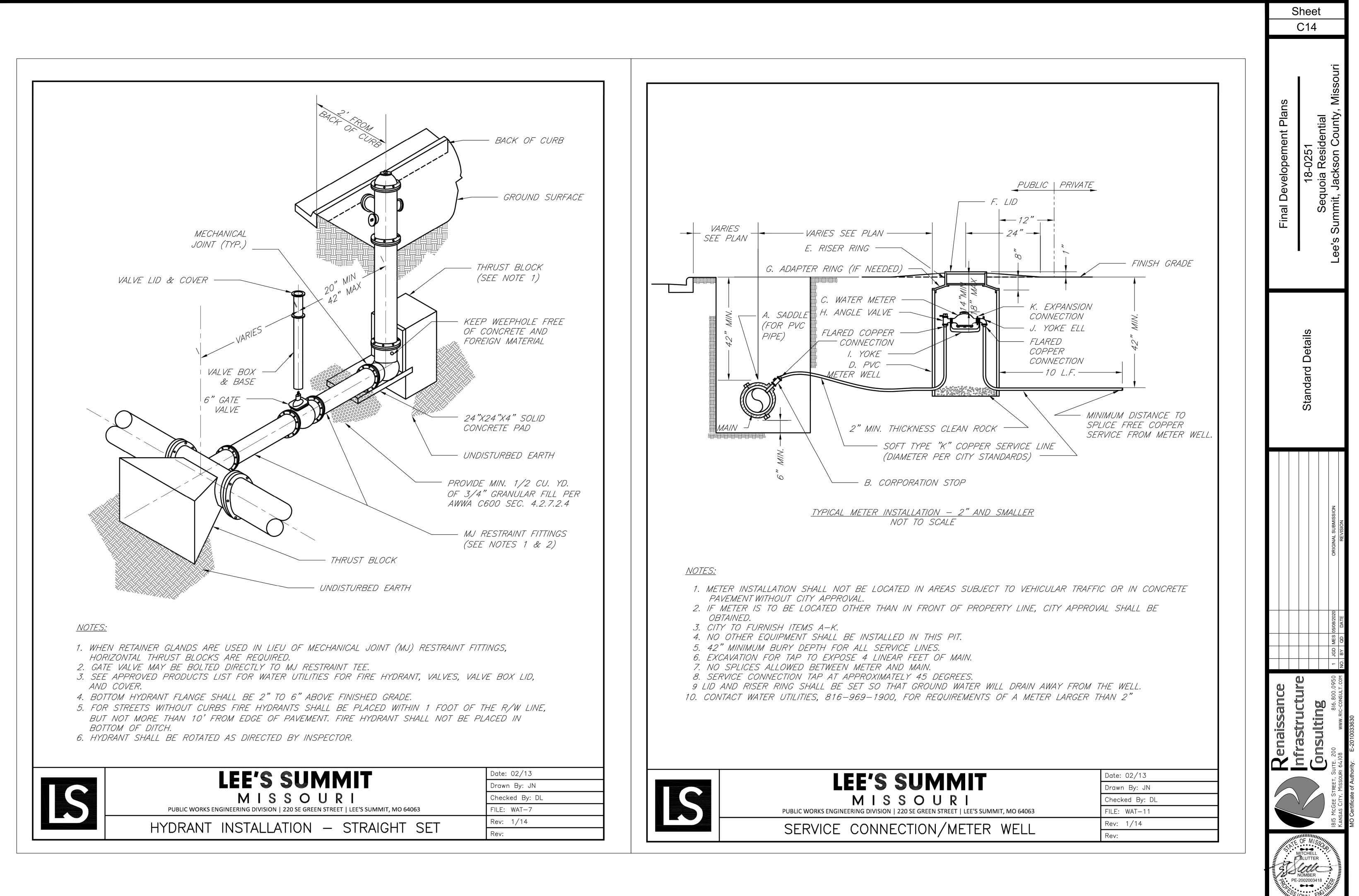




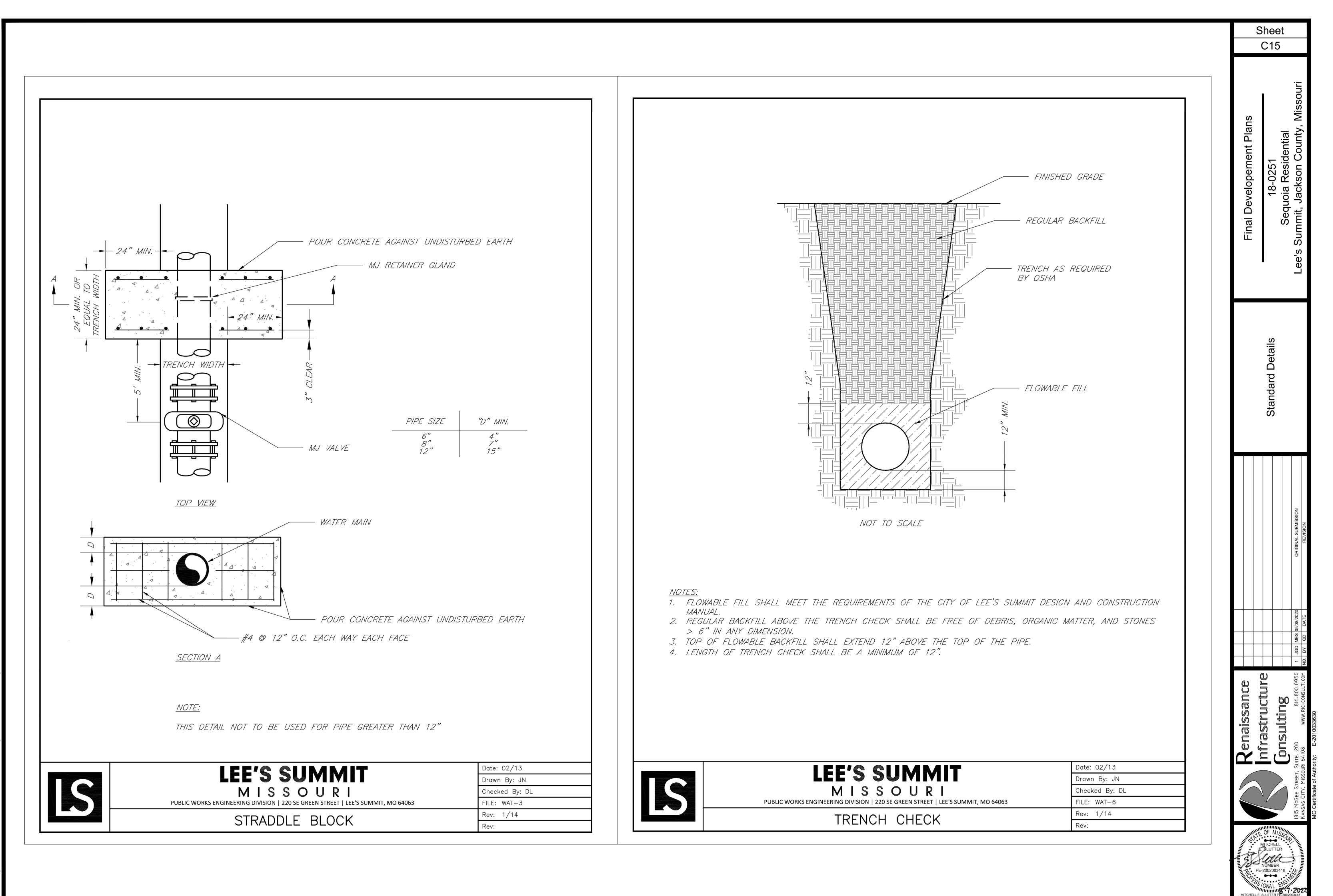
			Sheet C13
REA (SQUARE FEET – SF) 45 22.5 11.25 BEND BEND BEND 4.0 4.0 4.0 6.4 4.0 4.0 10.0 5.1 4.0 14.4 7.4 4.0 19.6 10.0 5.0 25.6 13.1 6.6 32.5 16.5 8.3 40.1 20.4 10.3 REST. JT. 29.4 14.8 CONCRETE THRUST BLOCKS INSTALL TH CONCRETE THRUST BLOCKING.	LED FOR RESTRAINT.	Final Developement Plans	18-0251 Sequoia Residential Lee's Summit, Jackson County, Missouri
E) WITH CONCRETE.	EARTH BEARING AREA (TYP)		Standard Details
	" BOND BREAKER	enaissance	Sulting 816.800.0950 1 JGD MES 05/08/2020 ORIGINAL SUBMISSION MWW.RIC-CONSULT.COM NO PV DATE DATE DATE DATE DATE DATE DATE DATE
<b>I STREET   LEE'S SUMMIT, MO 64063</b>	Date: 02/13 Drawn By: JN Checked By: DL FILE: WAT-1 Rev: 1/14 Rev:		IBI5 MCGEE STREET, SUITE. 200 KANSAS CITY, MISSOURI 64108

PE-20020034 

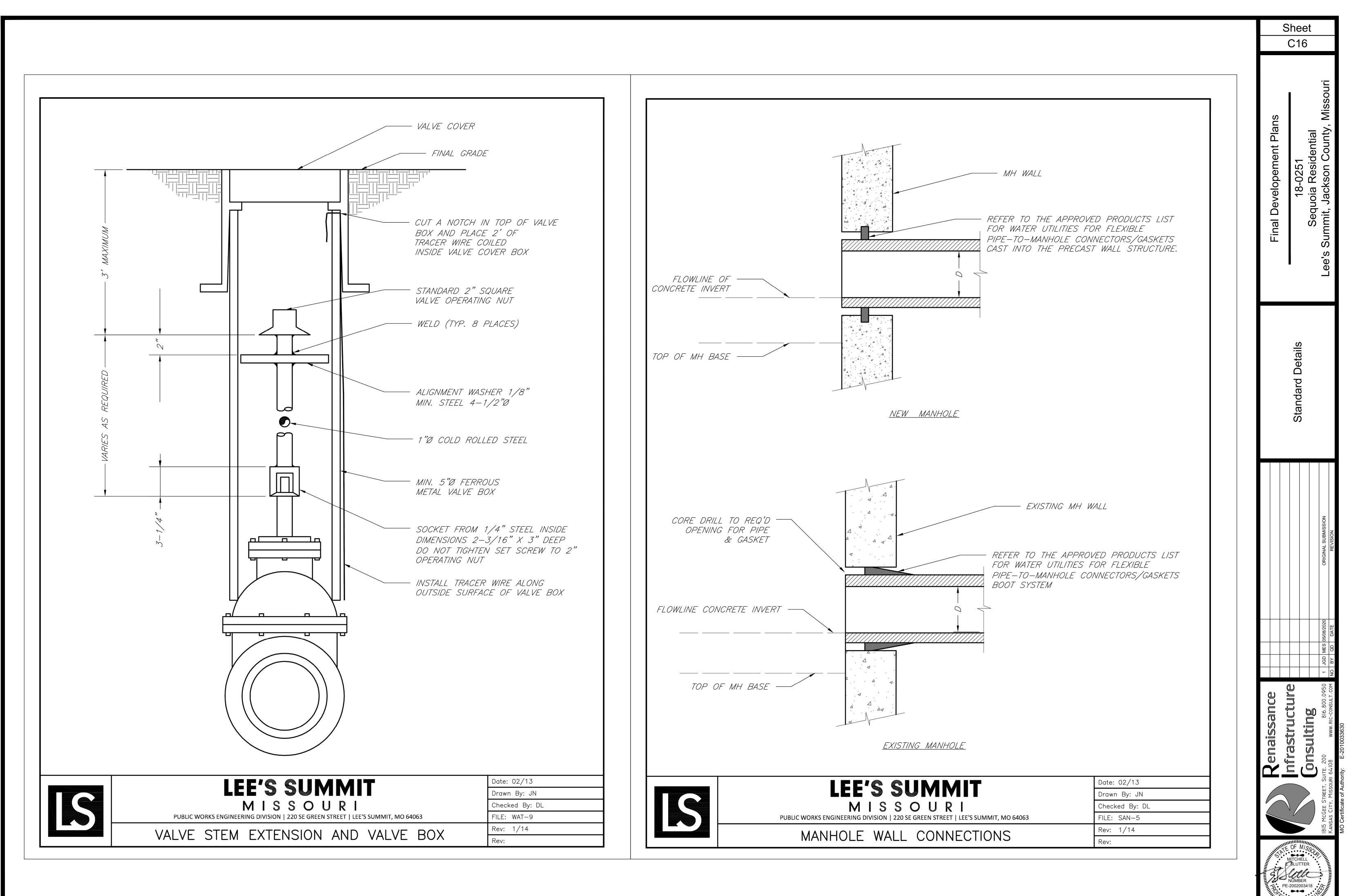
ITCHELLE SLU



/lay 06 , 2020-2:05pm \RIC Design\2018\18-0251 Burton Townhomes Lees Summit\Dwg\FDPs\Standard Details.dwg

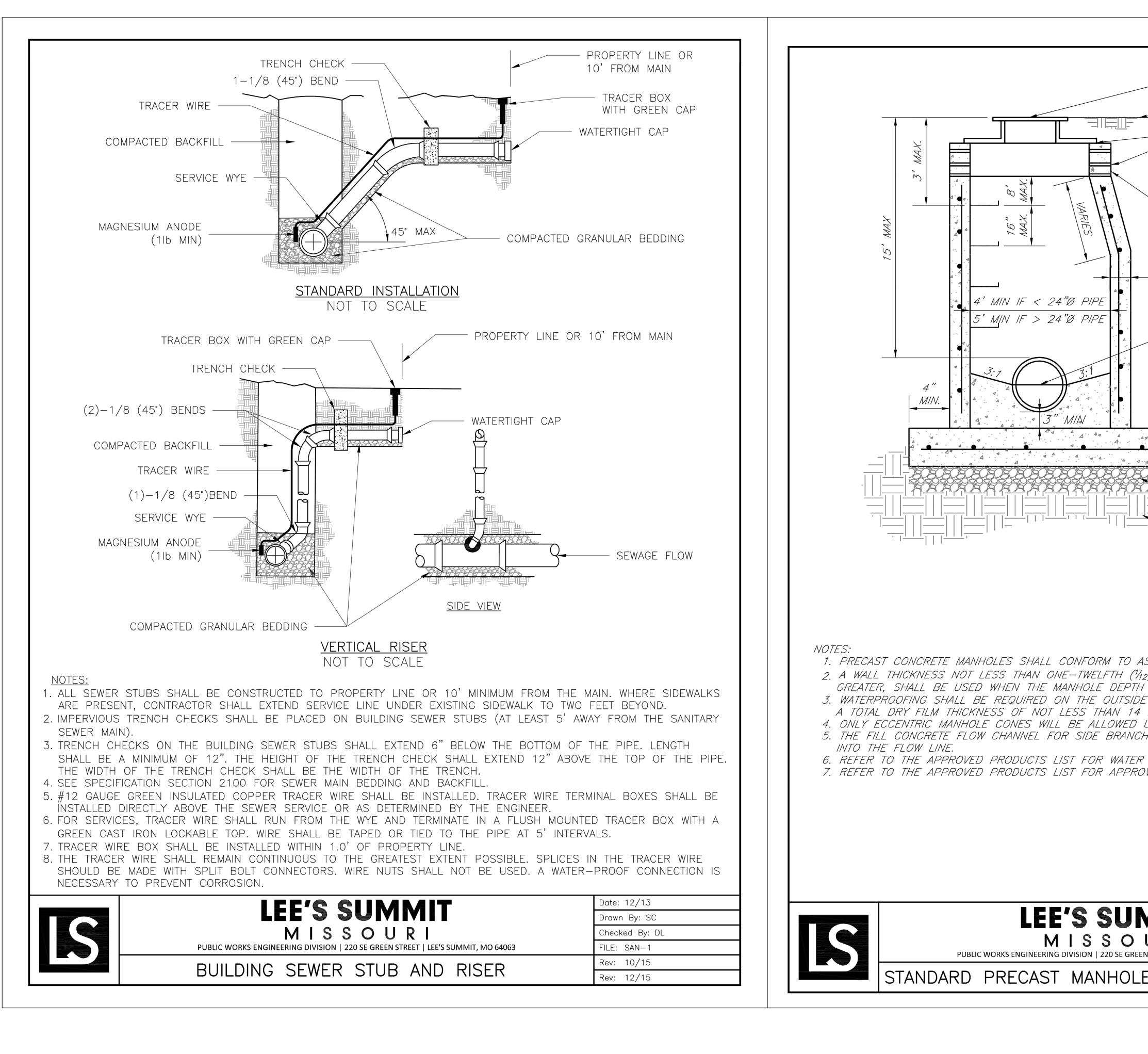


ay 06 , 2020-2:05pm RIC Design/2018/18-0251 Burton Townhomes Lees Summit\Dwg\FDPs\Standard Details.dwg



MITCHELL E. SLUTTI

ay 06 , 2020-2:05pm RIC Design\2018\18-0251 Burton Townhomes Lees Summit\Dwg\FDPs\Standard Details.dwg

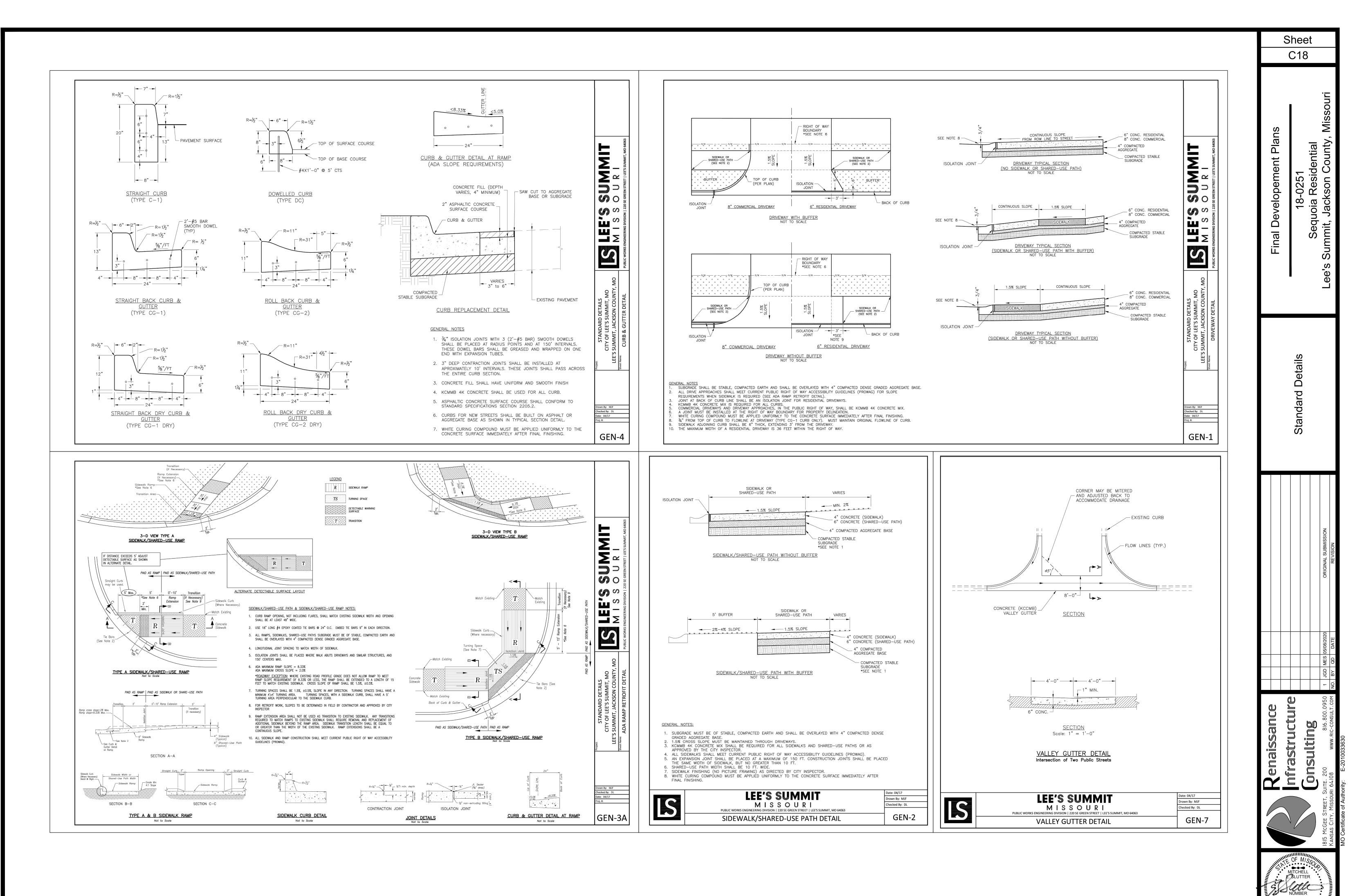


PUBLIC WORKS ENGINEERING DIVISION | 220 SE GREEP STANDARD PRECAST MANHOLE

 $\mathcal{I} \mathcal{Q}$ 

		heet C17
FOR FINIS PROV JOINT JOINT JOINT JOINT JOINT JOINT JOINT	MAXIMUM ADJUSTING RINGS REQUIRED	Sequoia Residential Del's Summit Jackson County Missouri
3:1 3:1 3:1 3:1 1 1 1 1 1 1 1 1 1 1 1 1 1	RING LINE GRAL CAST BASE	Standard Details
CHALL CONFORM TO ASTM C478 EXCEPT AS AN ONE-TWELFTH (1/12) OF THE INSIDE DIA THE MANHOLE DEPTH IS LESS THEN 15'. RED ON THE OUTSIDE OF MANHOLES. THE NOT LESS THAN 14 MILS OF BITUMINOUS S WILL BE ALLOWED UNLESS OTHERWISE A VEL FOR SIDE BRANCHES SHALL BE PLACE WEL FOR SIDE BRANCHES SHALL BE PLACE WETS LIST FOR WATER UTILITIES FOR APPRO WETS LIST FOR APPROVED STEPS.	AMETER OR 4", WHICHEVER IS WATERPROOFING SHALL CONSIST OF COATING. APPROVED BY THE CITY ENGINEER. TO TO PROVIDE A SMOOTH TRANSITION	1 JGD MES 05/08/2020 ORIGINAL SUBMISSION
<b>LEE'S SUMMIT</b> M I S S O U R I GINEERING DIVISION   220 SE GREEN STREET   LEE'S SUMMIT, MO 640 CAST MANHOLE — SANITAR	Date: 02/13 Drawn By: JN Checked By: DL FILE: SAN-2	Intraducture BI5 McGee Street, Suite, 200 816,800.0950

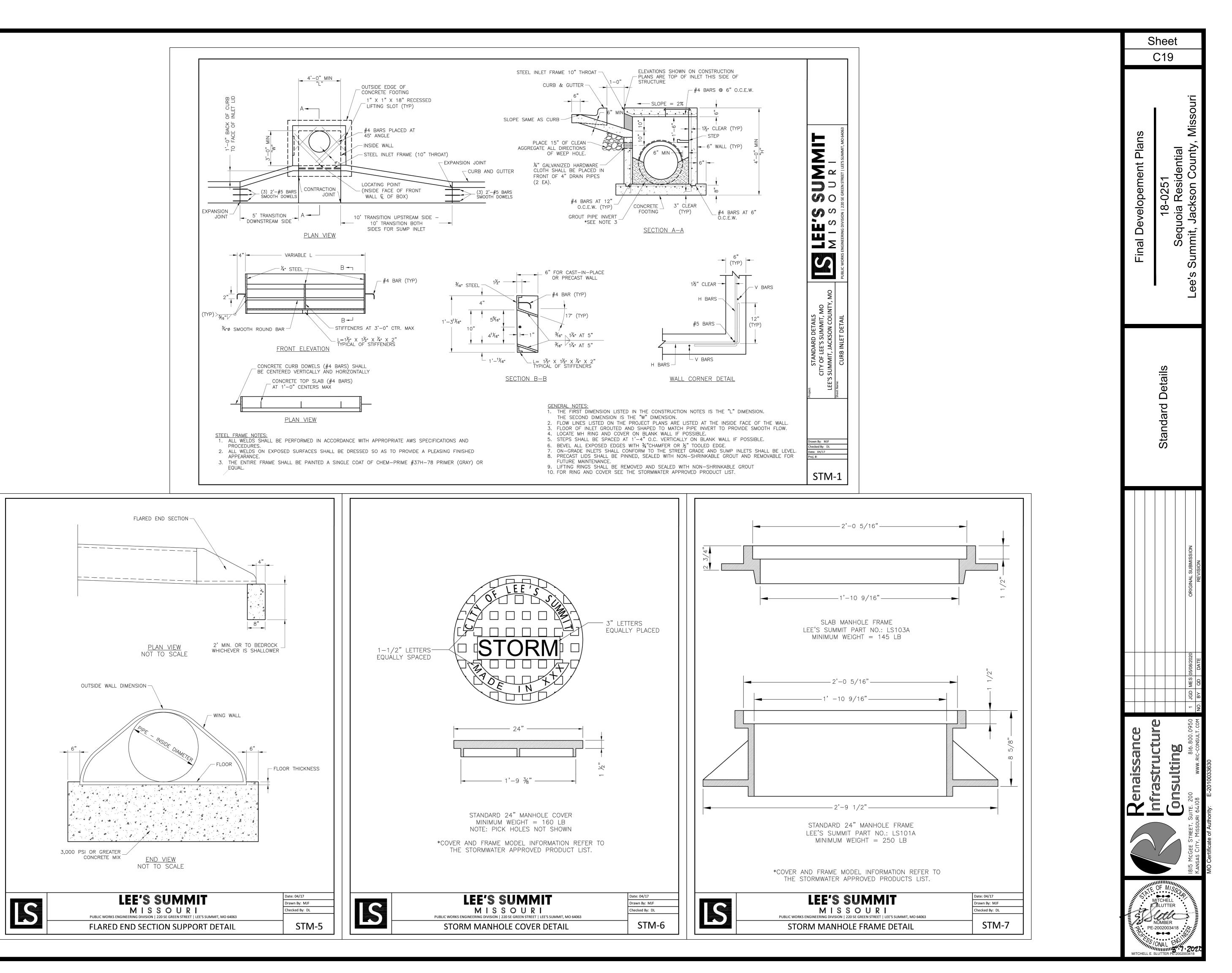
PE-2002003418 ►••◄



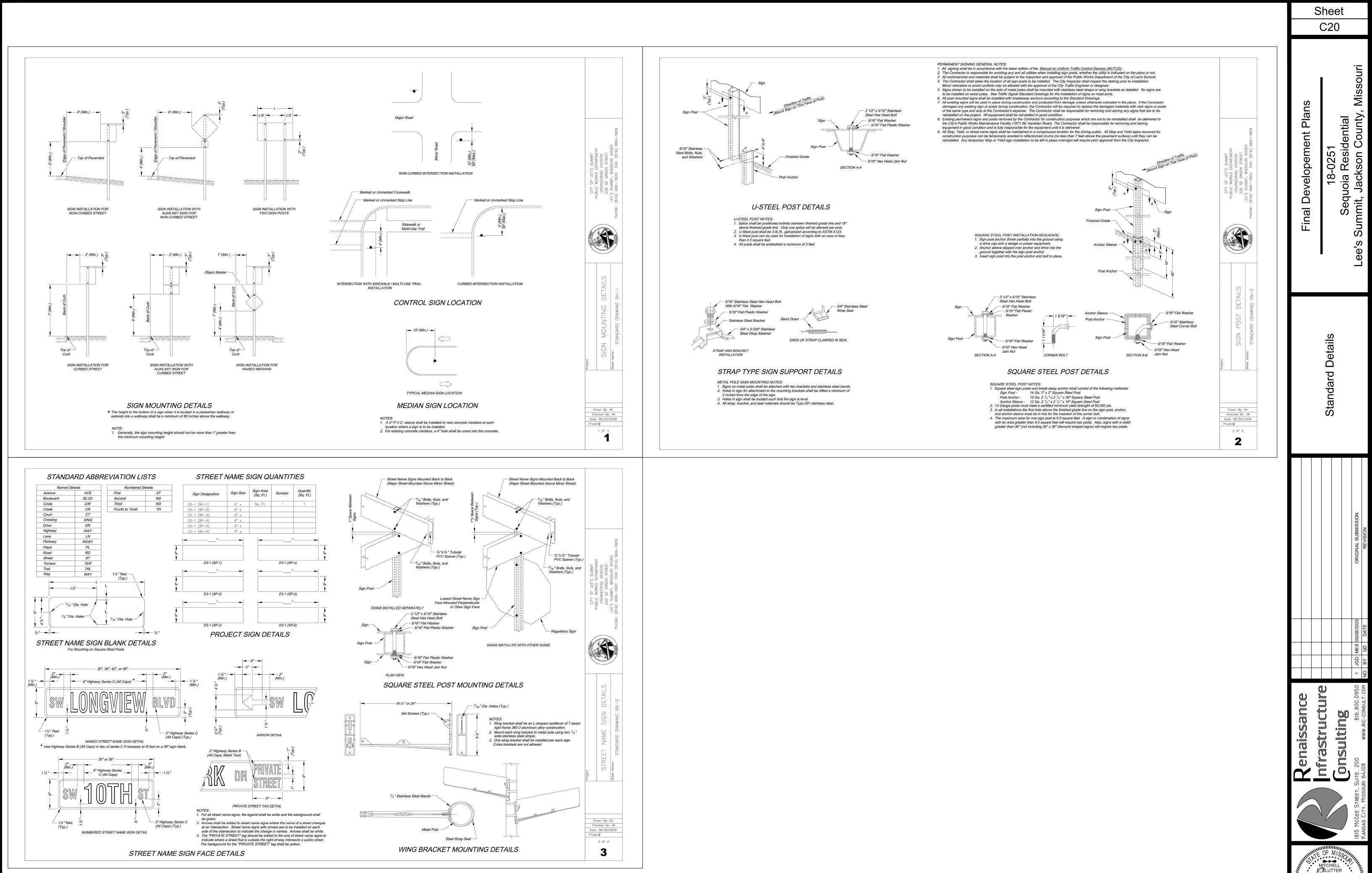
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MITCHELL E. SLUTTE

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May 06,2020-2:06pm \*/RIC Desicn/2018/18-0251 Burton Townhomes Lees Summit/Dwd/EDPs/Standard Details dwd



NÜMBER • PE-2002003418 

MITCHELL E. SLUTTE



Required Shrubs = 2/200 sf

oneernontage			
Required Width = 20 ft		Provided Width:	20 ft
NW OLIVE STREET	Distance in ft:	285.7	
Required Trees = 1/30 ft	9.5	Provided Trees:	10
Required Shrubs = 1/20 ft	14.3	Provided Shrubs:	15
NW ORCHARD CIRCLE	Distance in ft:	760	
Required Trees = 1/30 ft	25.3	Provided Trees:	26
Required Shrubs = 1/20 ft	38.0	Provided Shrubs:	38
Open Yard	Lot sf	164656.8 Total Open Space sf:	109407.94
Required Trees = 1/5000 sf	21.9	Provided Trees:	22
Required Shrubs = 2/5000 sf	43.8	Provided Shrubs:	44
Screening			
North Property Line	Distance in ft:	330	
Required Intensity	High		
Required Width in ft	20.0	Provided Width:	20 ft
Required Wall/Vinyl Fence ht	6 ft	Provided Fence:	6 ft ht
Required Shade Tree = 1/750 sf	8.8	Provided Shade Tree:	9
Required Ornamental Tree = 1/750 sf	8.8	Provided Ornamental Tree:	9
Required Evergreen Tree = 1/750 sf	8.8	Provided Evergreen Tree:	9

Provided Shrubs:

-33

33.0

Required Shade Tree = 1/750 sf Required Ornamental Tree = 1/750 sf Required Evergreen Tree = 1/750 sf Required Shrubs = 2/200 sf

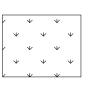
West Property Line **Required Intensity** Required Width in ft Required Wall/Vinyl Fence ht Required Shade Tree = 1/750 sf Required Ornamental Tree = 1/750 sf Required Evergreen Tree = 1/750 sf Required Shrubs = 2/200 sf

PLANT SCHEDULE OPENSPACE AND BUFFER LANDSCAPE						
ORNAMENTAL CC	<u>BOTANICAL / COMMON NAME</u> Cercis canadensis `Forest Pansy` TM / Forest Pansy Redbud	<u>CONT</u> B&B	<u>CAL</u> 2" Cal.	<u>SIZE</u>	<u>QTY</u> 12	
CF	Cornus florida `Cherokee Princess` / Cherokee Princess Dogwood	B&B	2" Cal.		18	
МХ	Malus x `Spring Snow` / Spring Snow Crab Apple	B&B	2" Cal.		15	
DECIDUOUS TREES ARO	BOTANICAL / COMMON NAME Acer rubrum `October Glory` TM / October Glory Maple	CONT B&B	<u>CAL</u> 2.5" Cal.	SIZE	<u>QTY</u> 14	
СВ	Carpinus betulus `Fastigiata` / Pyramidal European Hornbean	B&B	2.5" Cal.		4	
NSW	Nyssa sylvatica `Wildfire` / Black Gum	B&B	2.5" Cal.		16	
QRR	Quercus robur `Regal Prince` / Regal Prince English Oak	B&B	2.5" Cal.		3	
QS	Quercus shumardii / Shumard Red Oak	B&B	2.5" Cal.		8	
UA	Ulmus americana `Valley Forge` / American Elm	B&B	2.5" Cal.		10	
EVERGREEN TREES JC	<u>BOTANICAL / COMMON NAME</u> Juniperus virginiana `Canaertii` / Canaerti Juniper	CONT B&B	CAL	<u>SIZE</u> 6` Ht. Min.	<u>QTY</u> 11	
PP	Picea pungens `Fat Albert` / Colorado Spruce	B&B		6` Ht. Min.	14	
PS	Pinus strobus / White Pine	B&B		6` Ht. Min.	4	
TD	Taxodium distichum / Bald Cypress	B&B		6` Ht. Min.	10	
<u>SHRUBS</u> AM	<u>BOTANICAL / COMMON NAME</u> Aronia melanocarpa `Morton` TM / Iroquis Beauty Black Chokeberry	CONT 3 Gal.	÷	÷	QTY 32	
IV	Itea virginica `Henry`s Garnet` / Henry`s Garnet Sweetspire	5 Gal.			10	
JF	Juniperus chinensis `Sea Green` / Sea Green Juniper	5 Gal.			12	
PD	Physocarpus opulifolius `Diablo` / Diablo Ninebark	5 Gal.			23	

## OVERALL SEED AND SOD SCHEDULE

GROUND COVERS

**BOTANICAL / COMM** 



Detention Basin and I

Prairie Nursery Deten Seed Mix

Turfgrass Sod Fescu

PLANT SCHEDULE NOTE:

- 1. OVERALL SEED AND SOD SCHEDULE INCLUDES STREET FRONTAGE AREAS 2. SEE SHEET L02 FOR SEPARATE BUFFER PLANTING SCHEDULES - NORTH PROPERTY LINE BUFFER - NORTHEAST PROPERTY LINE BUFFER - SOUTH PROPERTY LINE BUFFER
- WEST PROPERTY LINE BUFFER 3. SEE SHEET L03 FOR SEPARATE OPEN SPACE - OPEN SPACE
- NW OLIVE STREET AND NW ORCHARD STREET

PLANTING NOTE:

- STREET FRONTAGE PLAN (STREET AND STORM PLANS)

9.1

9.1

34.0

20.0

13.4

13.4

13.4

50.3

Low

6 ft

Distance in ft:

Provided Shade Tree:

Provided Shrubs:

Provided Width:

Provided Fence:

Provided Shrubs:

Provided Shade Tree:

503

Provided Ornamental Tree: 10

Provided Evergreen Tree: 10

Provided Ornamental Tree: 14

Provided Evergreen Tree: 14

10

20 ft

14

6 ft ht

FENCE IN LIEU OF SHRUBS

FENCE IN LIEU OF SHRUBS

MON NAME	CONT	SPACING	QTY
BioSwale Seed Mix / Seed ntion Basin - Bioswale	SEED		26,384 sf
ie Mix / Fescue Sod	SOD		82,087 sf

		Final Developement Plans		18_0751	Sequoia Residential	Lee's Summit. Jackson County. Missouri	
				Landscape Plan			
						ORIGINAL SUBMISSION	REVISION
						1 JMM AG 05/08/2020	D. BY QD DATE
S	Denaissance					816.800.0950	4108 WWW.RIC-CONSULT.COM NO. BY QD DATE
						1815 MCGEE STREET, SUITE. 200	KANSAS CITY, MISSOURI 64108
4	The second states	*	TE TO	OF ANE ABE	 500		

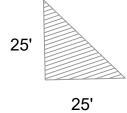
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L01

T. Andrew Gabbert MO# LA-2007013278

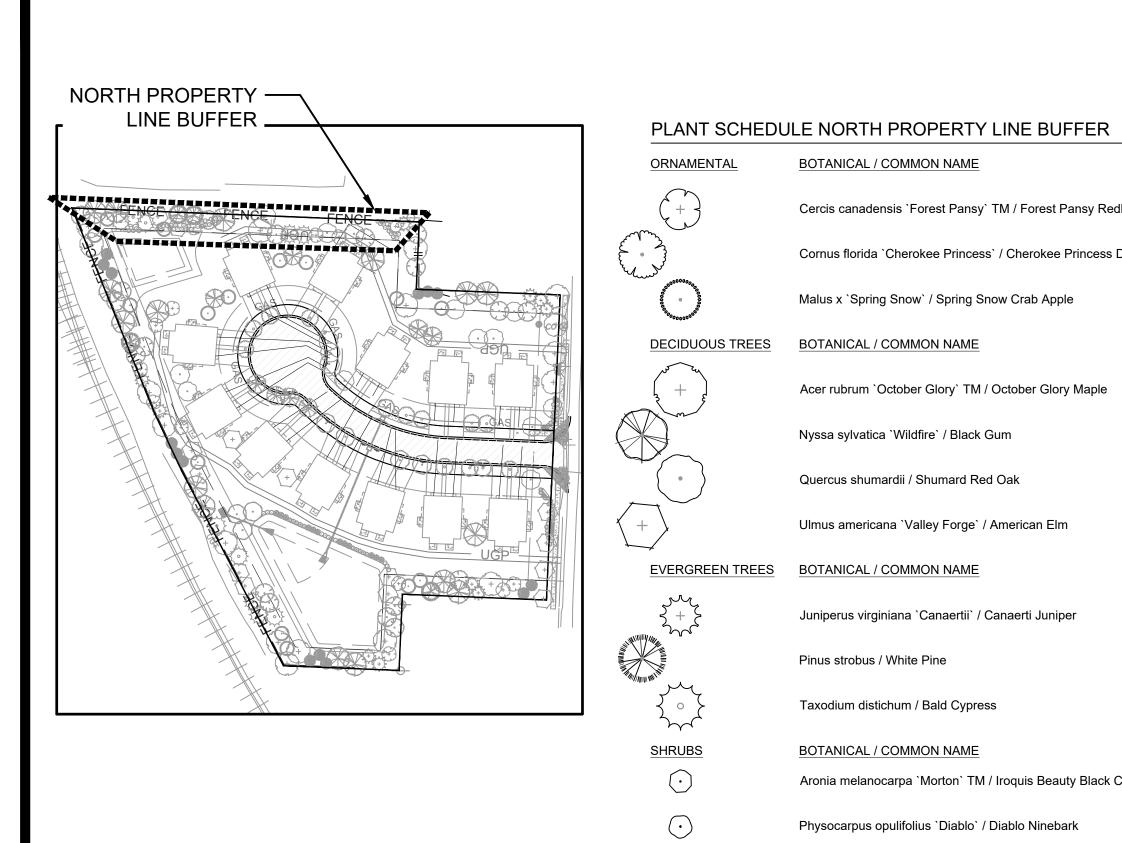
4. SEE SHEET L03 FOR OVERALL SCHEDULE INCLUDING STREET FRONTAGE PLANTINGS 5. SEE STREET FRONTAGE PLAN (STREET AND STORM PLANS)FOR STREET FRONTAGE SCHEDULE

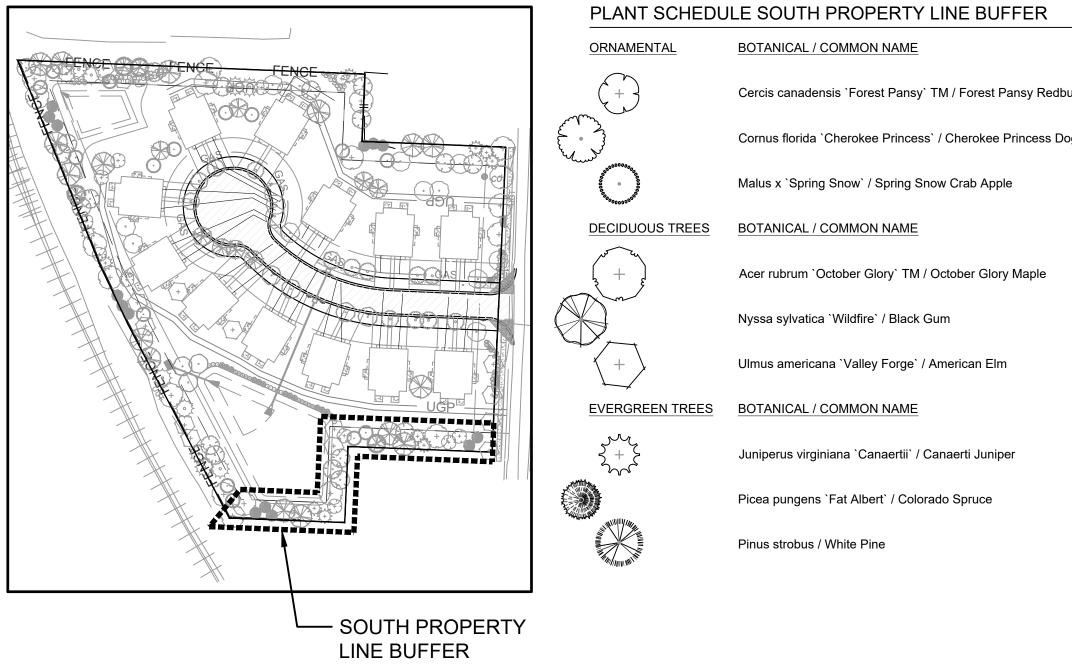
1. 15 OPEN SPACE SHRUBS HAVE BEEN RELOCATED TO THE NORTHERN BUFFER ADJACENT TO PI ZONING DISTRICT 2. FRONTAGE SHRUBS FOR NW ORCHARD STREET HAVE BEEN RELOCATED TO NW OLIVE STREET. REFER TO



SIGHT TRIANGLE - NT







PLANT SCHEDULE NOTE:

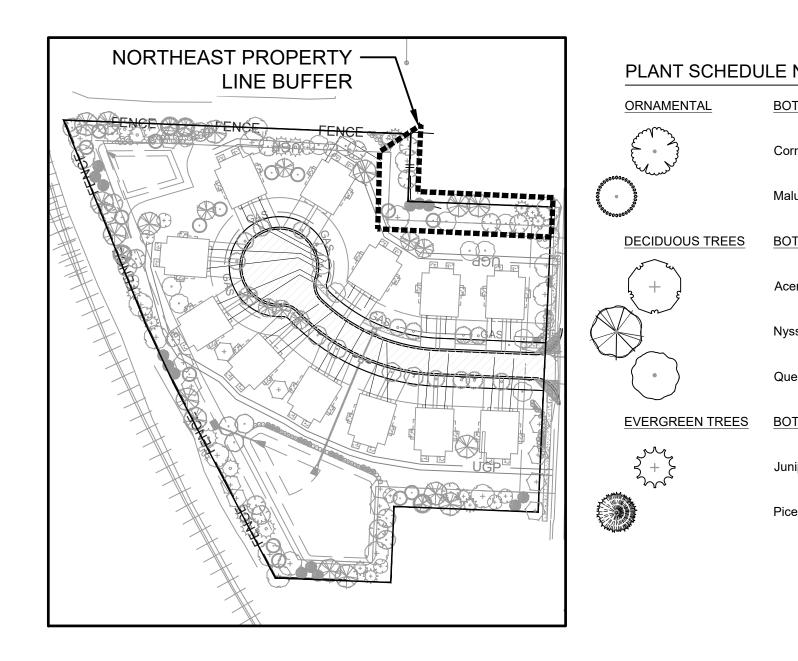
1. SEE SHEET L01 FOR OVERALL LANDSCAPE PLAN AND SCHEDULE

- 2. SEE SHEET L01 FOR SEED AND SOD SCHEDULE
- 3. SEE SHEET L03 FOR SEPARATE OPEN SPACE SCHEDULE

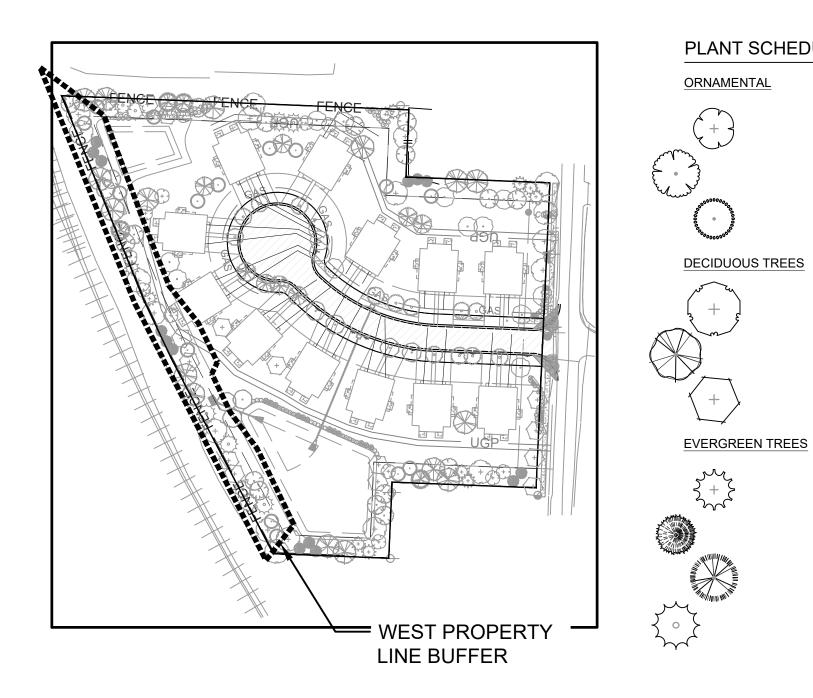
4. SEE SHEET L03 FOR OVERALL LANDSCAPE SCHEDULE INCLUDING STREET FRONTAGE PLANTINGS

5. SEE STREET FRONTAGE PLAN (STREET AND STORM PLANS) FOR STREET FRONTAGE SCHEDULE

	CONT	CAL	SIZE	QTY
edbud	B&B	2" Cal.		3
s Dogwood	B&B	2" Cal.		4
	B&B	2" Cal.		2
	CONT	CAL	SIZE	<u>QTY</u>
	B&B	2.5" Cal.		2
	B&B	2.5" Cal.		3
	B&B	2.5" Cal.		2
	B&B	2.5" Cal.		2
	CONT	CAL	SIZE	QTY
	B&B		6` Ht. Min.	2
	B&B		6` Ht. Min.	2
	B&B		6` Ht. Min.	5
Chalval	<u>CONT</u>	÷	÷	
Chokeberry	3 Gal.			22
	5 Gal.			17



	CONT	CAL	SIZE	QTY
bud	B&B	2" Cal.		4
ogwood	B&B	2" Cal.		4
	B&B	2" Cal.		2
	CONT	CAL	SIZE	QTY
	B&B	2.5" Cal.		4
	B&B	2.5" Cal.		4
	B&B	2.5" Cal.		2
	CONT	CAL	SIZE	QTY
	B&B		6` Ht. Min.	4
	B&B		6` Ht. Min.	5
	B&B		6` Ht. Min.	1



## PLANT SCHEDULE NORTHEAST PROPERTY LINE BUFFER

OTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
ornus florida `Cherokee Princess` / Cherokee Princess Dogwood	B&B	2" Cal.		4
alus x `Spring Snow` / Spring Snow Crab Apple	B&B	2" Cal.		2
OTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
cer rubrum `October Glory` TM / October Glory Maple	B&B	2.5" Cal.		2
yssa sylvatica `Wildfire` / Black Gum	B&B	2.5" Cal.		2
uercus shumardii / Shumard Red Oak	B&B	2.5" Cal.		2
OTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
uniperus virginiana `Canaertii` / Canaerti Juniper	B&B		6` Ht. Min.	3
cea pungens `Fat Albert` / Colorado Spruce	B&B		6` Ht. Min.	3

## PLANT SCHEDULE WEST PROPERTY LINE BUFFER

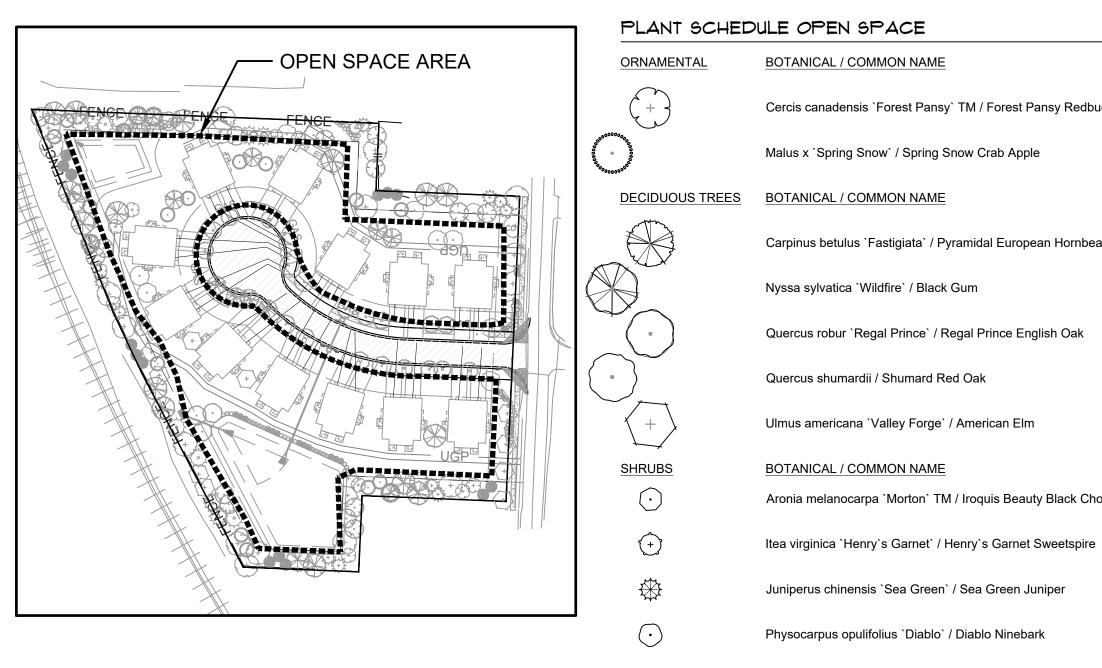
	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	<u>QTY</u>
	Cercis canadensis `Forest Pansy` TM / Forest Pansy Redbud	B&B	2" Cal.		3
	Cornus florida `Cherokee Princess` / Cherokee Princess Dogwood	B&B	2" Cal.		6
	Malus x `Spring Snow` / Spring Snow Crab Apple	B&B	2" Cal.		5
8	BOTANICAL / COMMON NAME	<u>CONT</u>	CAL	SIZE	<u>QTY</u>
	Acer rubrum `October Glory` TM / October Glory Maple	B&B	2.5" Cal.		6
	Nyssa sylvatica `Wildfire` / Black Gum	B&B	2.5" Cal.		4
	Ulmus americana `Valley Forge` / American Elm	B&B	2.5" Cal.		4
<u>s</u>	BOTANICAL / COMMON NAME	CONT	CAL	SIZE	QTY
	Juniperus virginiana `Canaertii` / Canaerti Juniper	B&B		6` Ht. Min.	2
	Picea pungens `Fat Albert` / Colorado Spruce	B&B		6` Ht. Min.	6
	Pinus strobus / White Pine	B&B		6` Ht. Min.	1
	Taxodium distichum / Bald Cypress	B&B		6` Ht. Min.	5

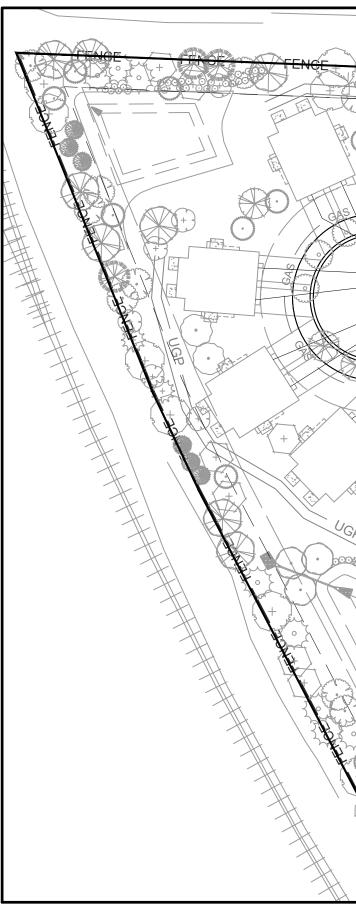
# Sheet L02 õ Miss Plans ntv ntial Developement 025 $\infty$ л С Second Final Sun S $\overline{}$ S edule сh S eparate S **a** Renaissance Infrastructure Onsulting TE OF MIC T. ANDREW GABBERT NUMBER LA-2007013278

strificate of Authority: E-201003

2-00-20

T. Andrew Gabbert MO# LA-2007013278





PLANT SCHEDULE NOTE: 1. SEE SHEET L01 FOR OVERALL LANDSCAPE PLAN AND SCHEDULE 2. SEE SHEET L01 FOR SEED AND SOD SCHEDULE

- 3. SEE SHEET L02 FOR SEPARATE BUFFER SCHEDULES
- 4. SEE STREET FRONTAGE PLAN (STREET AND STORM PLANS) FOR STREET FRONTAGE SCHEDULE

OVERALL LANDSCAPE PLAN 1" = 60'

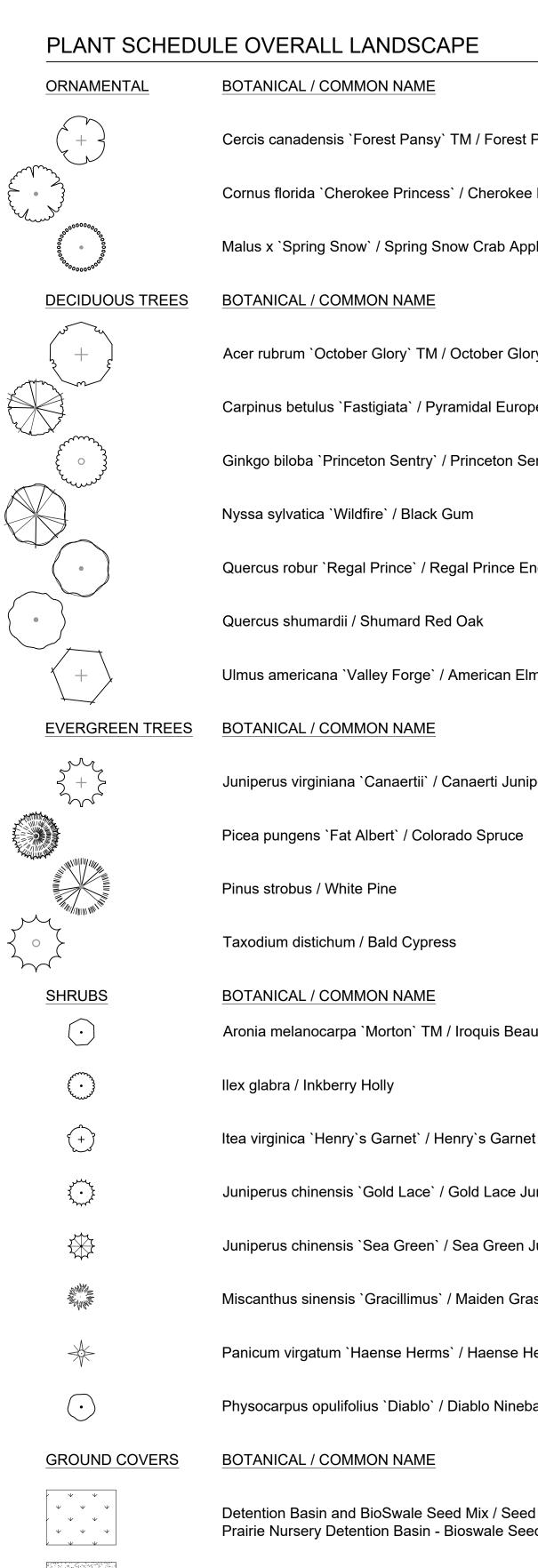
	CONT	CAL	<u>QTY</u>
Redbud	B&B	2" Cal.	2
	B&B	2" Cal.	4
	<u>CONT</u>	CAL	QTY
ornbean	B&B	2.5" Cal.	4
	B&B	2.5" Cal.	3
Dak	B&B	2.5" Cal.	3
	B&B	2.5" Cal.	4
	B&B	2.5" Cal.	2
	CONT	÷	QTY
ck Chokeberry	3 Gal.		5
tspire	5 Gal.		10

5 Gal.

5 Gal.

12

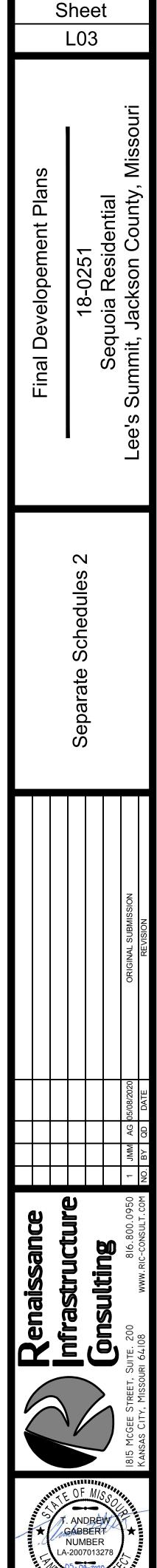
## PLANT SCHEDULE OVERALL LANDSCAPE



Detention Basin and BioSwale Seed Mix / Seed Prairie Nursery Detention Basin - Bioswale See

Turfgrass Sod Fescue Mix / Fescue Sod

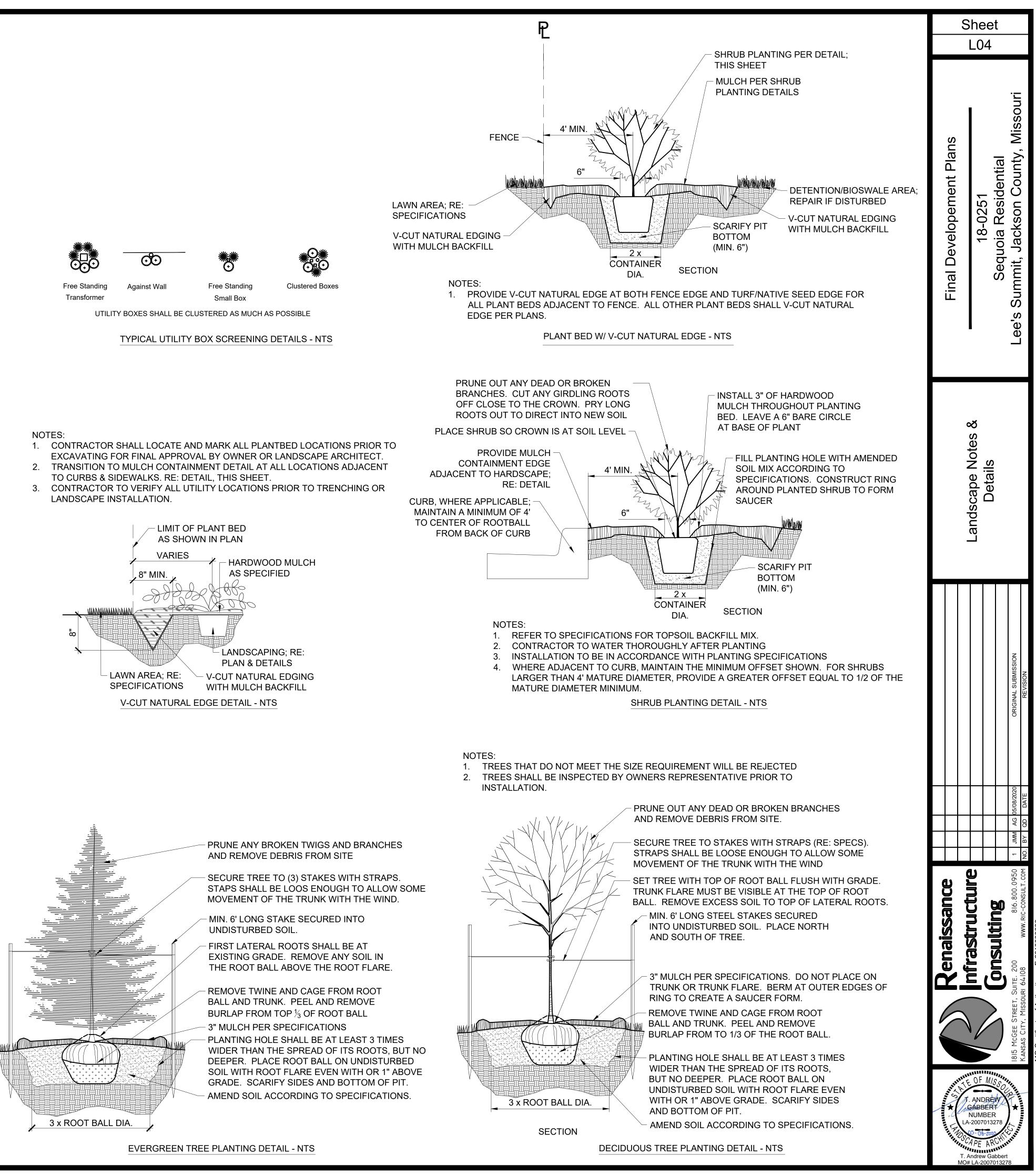
	CONT	CAL	SIZE		QTY
Pansy Redbud	B&B	2" Cal.			12
e Princess Dogwood	B&B	2" Cal.			18
ople	B&B	2" Cal.			15
	CONT	CAL	SIZE		QTY
ory Maple	B&B	2.5" Cal.			18
pean Hornbean	B&B	2.5" Cal.			8
entry Ginkgo	B&B	2.5" Cal.			13
	B&B	2.5" Cal.			16
English Oak	B&B	2.5" Cal.			7
	B&B	2.5" Cal.			15
lm	B&B	2.5" Cal.			14
	CONT	CAL	SIZE		QTY
iper	B&B		6` Ht. Min.		11
	B&B		6` Ht. Min.		14
	B&B		6` Ht. Min.		4
	B&B		6` Ht. Min.		10
	CONT	÷	÷		QTY
auty Black Chokeberry	3 Gal.				35
	6` Ht.				7
et Sweetspire	5 Gal.				22
luniper	5 Gal.				14
Juniper	5 Gal.				12
ass	5 Gal.				9
Herms Switch Grass	5 Gal.				8
bark	5 Gal.				23
	CONT			SPACING	QTY
ed ed Mix	SEED				26,384 sf
	SOD				82,087 sf



T. Andrew Gabbert MO# LA-2007013278

## LANDSCAPE NOTES

- 1. LOCATE UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. ALL TREES SHALL BE FIELD POSITIONED AS TO AVOID CONFLICTS WITH EXISTING AND PROPOSED UTILITIES. NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS OR OBSTRUCTIONS.
- 2. CONTRACTOR SHALL STAKE ALL PLANTING AREAS IN THE FIELD PRIOR TO PLANTING FOR APPROVAL OF THE OWNER OR THEIR REPRESENTATIVE.
- 3. CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES PRIOR TO PLANTING. ANY DISCREPANCIES WITH THE PLAN SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT. THE PLAN QUANTITIES SHALL SUPERCEDE SCHEDULED QUANTITIES.
- 4. ALL PLANT MATERIAL SHALL BE SPECIMEN QUALITY AND SHALL COMPLY WITH RECOMMENDATIONS AND REQUIREMENTS OF ANSI Z60.1 THE 'AMERICAN STANDARD FOR NURSERY STOCK'.
- 5. ALL PLANTING BEDS & NATIVE GRASS STANDS SHALL BE EDGED AS SHOWN IN PLAN.
- 6. PREPARE PLANTING BEDS AND INCORPORATE AMENDMENTS ACCORDING TO PLANS.
- 7. SHREDDED HARDWOOD MULCH, PER SPECIFICATIONS SHALL BE USED AS A THREE INCH (3") TOP DRESSING IN ALL PLANTING BEDS AND AROUND ALL TREES. SINGLE TREES AND SHRUBS SHALL BE MULCHED TO THE OUTSIDE EDGE OF THE SAUCER OR LANDSCAPE ISLAND.
- 8. ALL TREES SHALL BE STAKED PER DETAIL.
- 9. ALL PLANT MATERIAL SHALL BE INSTALLED TO ALLOW A ONE FOOT (1') CLEARANCE BETWEEN PLANT AND ADJACENT PAVEMENT.
- 10. THE LANDSCAPE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE SITE IS FREE OF DEBRIS CAUSED BY ON-GOING CONSTRUCTION OPERATIONS. REMOVAL OF DEBRIS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. LANDSCAPE WORK SHALL NOT BEGIN UNTIL THE LANDSCAPE ARCHITECT AND OWNER HAVE GIVEN WRITTEN APPROVAL FOR SUCH. THERE SHALL BE NO DELAYS DUE TO LACK OF COORDINATION FOR THIS ACTIVITY.
- 11. THE LANDSCAPE ARCHITECT AND OWNER SHALL APPROVE GRADES AND CONDITION OF SITE PRIOR TO SODDING/SEEDING OPERATIONS.
- 12. ALL AREAS DISTURBED DURING CONSTRUCTION AND NOT DESIGNATED FOR OTHER PLANTINGS OR HARDSCAPE SHALL BE SODDED WITH TURF TYPE FESCUE.
- 13. LIMITS OF IRRIGATION SHALL BE DETERMINED BY OWNER. TURF AREAS SHALL BE IRRIGATED BY SPRAY OR ROTOR. PLANT BEDS SHALL BE IRRIGATED BY DRIP IRRIGATION. IRRIGATION SYSTEM SHALL INCLUDE AUTOMATIC RAIN-SENSOR DEVICE. IRRIGATION SHOP DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR FOR APPROVAL PRIOR TO CONSTRUCTION.



PART	1 - GENERAL	C.	<ol> <li>Planting Time: Proceed with, and complete la</li> </ol>
	SUMMARY:		<ul><li>within seasonal limitations for each kind of la</li><li>All planting shall be performed during favora</li></ul>
	This Section includes the following:		performed during times of extreme drought, w
	<ol> <li>Furnishing trees, shrubs &amp; plants.</li> <li>Demonstring of all of an additional statements and have added and the statements of a statement of a statements of a statement of a statemen</li></ol>		conditions unless otherwise approved by the l responsibility for all such plantings and opera
	2. Preparation of planting pits and beds, including excavation, backfilling, and disposal of surplus and unsuitable excavated material.		3. Dig, ball and burlap deciduous plants only whether the second
	3. Planting of plants (trees, shrubs, groundcovers, vines & perennials), including fertilizing, mulching, trimming, guying, and wrapping.		<ul><li>be planted at any time during the same year, s</li><li>4. Recommended dates for tree and shrub planti</li></ul>
	4. Maintenance of plants.		approved by the Landscape Architect.
	REFERENCE:	D.	Plant trees and shrubs after final grades are estab Landscape Architect. If planting of trees and shr
В.	Applicable Standards: 1. American National Standards Institute (ANSI):	_	damage to lawns resulting from planting operation
	a. Z60.1 Nursery Stock.		Correlate planting with specified maintenance per Coordination: All planting work shall be coordin
	SUBMITTALS:	1.	done by others.
A.	General: Upon completion of the installation, deliver to Landscape Architect the following in accordance with the Conditions of the Contract and Division I Specification Sections.	1.08	PROJECT WARRANTY:
В.	Include, but not limited to, the following:	A.	General Warranty: Warranty specified in this An
	1. Product Certification: Certificate of inspection as may be required by governing authorities. For standard products, submit manufacturer's certified analysis. For other materials, submit analysis by a recognized laboratory made in		under other provisions of the Contract Document made by the Subcontractor under requirements o
	accordance with methods established by Association of Official Agricultural Chemists, wherever applicable.	B.	Special Warranty: Warrant the following living J
	2. Manufacturers Literature: Submit three (3) copies of fertilizer manufacturer's literature along with schedule of maintenance program spanning the life of the guarantee and three (3) copies of a recommended post guarantee		Completion, against defects including death and a adequate maintenance, neglect, or abuse by the O
	maintenance program.		incidents that are beyond the Subcontractor's con 1. Trees
	<ol> <li>Label data substantiating that trees and shrubs comply with specified requirements.</li> <li>Materials List: Within 15 days after award of contract, and before any materials are delivered to the job site, submit</li> </ol>		2. Shrubs/Grasses/Vines
	to Landscape Architect a complete list of all plants including the sizes ordered and the type of equipment to be used on this project.	C	3. Perennials Immediately prior to plant warranty observation,
	5. As-Built Drawings: During course of installation, carefully record in red line on a print of the planting drawings all		material on site.
	<ul><li>changes made to the planting system layout during installations; approved by the Landscape architect.</li><li>6. Planting Schedule: Proposed planting schedule, indicating dates for each type of landscape work during normal</li></ul>	D.	Replacement Plants: The Subontractor shall repla permit, and within a specified planting period, al
	seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from		determined by the Landscape Architect during an
	date of Substantial Completion. Once accepted, revise dates only as approved in writing, after documentation of reasons for delays.	E.	dying branches and branch tips, and shall bear for Replacements shall closely match adjacent specie
	7. Maintenance Instructions: Typewritten instructions recommending procedures to be established by Owner for maintenance of landscape work for one full war. Submit might a surjection of required maintenance period(s)		requirements stated in the Specifications.
D.	maintenance of landscape work for one full year. Submit prior to expiration of required maintenance period(s). Product Data: Submit product data, supplier sources and small sample of the following:		The Subcontractor shall make all necessary repair repairs shall be done at no cost to the Owner.
	1. Shredded Hardwood Mulch	G.	Materials and Operations: All replacements shall They shall be furnished and planted as specified.
	<ol> <li>Fertilizer Planting Tablets</li> <li>Steel Edging</li> </ol>		Completion replacements resulting from the remo
	4. Filter Fabric		vandalism, or acts or neglect on the part of others.
	<ol> <li>5. Herbicide and Pre-emergent</li> <li>6. Imported Topsoil &amp; Analysis</li> </ol>	PART	
	<ul><li>7. Decorative Gravel</li></ul>		GENERAL:
04	QUALITY ASSURANCE:		Provide nursery-grown trees and shrubs, grown i
A.	Installers Qualifications: Engage a single firm specializing in landscape work with a minimum of 5 years experience		with healthy root systems developed by transplat under climatic conditions similar to conditions in
	who has completed landscaping work similar in material, design, and extent to that indicated for this project and with a record of successful landscape establishment.	л	defects such as knots, sun scald, injuries, abrasion
	1. Installers Field Supervision: Require installers to maintain an experienced full-time Supervisor on the project site	В.	Provide trees and shrubs of the sizes indicated in Z60.1 for kind and size of trees and shrubs require
B.	during times that landscaping is in progress. Source Quality Control.	C	acceptable to Landscape Architect. Label each tree and shrub with a securely attache
2.	1. General: ship landscape materials with certificates of inspection required by governing authorities. Comply with		name.
	<ul><li>regulations applicable to landscape materials.</li><li>2. Do not make substitutions. If specified landscape material is not obtainable, submit proof of non-availability to</li></ul>	D.	Nomenclature: Scientific and common names us Names." The names of varieties are generally in
	Landscape Architect, together with proposal for use of equivalent material.		Plant material size and measurements shall confe
	3. Topsoil: ASTM 5268, pH range 5.5 to 7. Free of stones 1-inch or larger in any dimension and other extraneous materials harmful to plant growth. All topsoil used in planting operations shall meet standards as defined in this	F.	<ul><li>Digging, wrapping, and shipping:</li><li>1. Plants shall be dug up and prepared for shipn</li></ul>
	specification.		future development of the plants after replant
	3.1. Before delivery of topsoil, furnish Landscape Architect with written statement giving location of properties from which the topsoil is to be obtained, names and addresses of owners, depth to be stripped and crops grown		covered.
	during the past 2 years.	2.02	TREES:
	4. Plant Material: Provide plant material of quantity, size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of (ANSI Z60.1-1986) "American Standard	A.	Trees shall not be pruned before delivery. Trees otherwise specified, will be rejected. Trees with a
	for Nursery Stock" for number one grade nursery stock as adopted by the American Association of Nurserymen. Provide healthy, vigorous stock, grown in recognized nursery in accordance with good horticultural practice and free		over 1 inch in diameter which have not complete
	of disease, insects, eggs, larvae, and defects such as knots, sun-scald, injuries, abrasions, and disfigurement.		1. Plants shall be measured when branches are in than the minimum size and not less than 50%.
	a. Measurements: Measure trees and shrubs according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for		The measurements specified are the minimur pruning is required. Plants that meet the measurement of the meas
	trees up to 4-inch caliper size. Measure main body of tree or shrub for height and spread; do no measure branches or roots tip-to-tip.		height and spread will be rejected.
	b. Plants shall be true to species and variety and shall conform to measurements specified in the plant schedule.		2. Plants shall be true to species and variety and that plants larger than specified may be used
	Larger plants may be used if approved by the landscape architect, however, if approved shall not increase the contract price.		increase the contract price. If larger plants ar of the plant according to ANSI Z60.1-1986.
	5. Label at least one tree and one shrub of each variety with a securely attached waterproof tag bearing legible	B.	Balled and Burlapped Plants:
C.	designation of botanical and common name. Inspection: The Subcontractor shall notify the Landscape Architect of the location of plant materials to be used and		1. All plants designated "B&B" in the Plant Sch diameter and depth no less than that specified
	allow the Landscape Architect the opportunity to inspect them either at the place of growth or at the site before planting,		plants which are 2" in caliper or over shall be
	for compliance with requirements for genus, species, variety, size, and quality. The Owner retains the right to further inspect trees and shrubs for size and condition of root balls and root systems, insects, injuries and latent defects, and to		broken either before or during the process of 2. Container grown plants will be acceptable in
	reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from the project site.		limitations of ANSI Z60.1 for container stock
(	C.1. Landscape Contractor shall provide a minimum of 72 hours prior notice of readiness for landscape material	C.	<ul><li>Protection against drying:</li><li>1. Root balls shall be adequately protected at al</li></ul>
р	inspection. Preinstallation Conference: Subcontractor to conduct conference at Project Site prior to installation.		plants which cannot be planted immediately
.05	OBSERVATIONS:	D.	other acceptable material. Plants shall not re Where shade trees are required, provide single st
	In addition to normal progress observations, schedule, and conduct the following formal observations to verify		point about 50% of their height for the size and k
	compliance with the specifications, giving the Landscape Architect at least 24 hours prior notice of readiness for	E.	Where small trees of upright or spreading type an naturally according to species and type:
B.	observation. Plant Material: The Landscape Architect shall observe the plant material at site before planting for compliance with	_	1. Where indicated as "multi-stem," provide tre
	requirements for genus, species, variety, size, and quality.	F.	Except as otherwise specified or indicated, provi burlapped trees:
	<ol> <li>If the Subcontractor requests, the Landscape Architect may observe plant materials at place of growth or storage.</li> <li>The Subcontractor shall notify the Landscape Architect 72 hours in advance of when plant material is to be</li> </ol>		<ol> <li>Container-grown trees will be acceptable in 1 limitations for container stock.</li> </ol>
	delivered and shall furnish an itemized listing of the actual quantities and size of plant materials to be observed at	2.02	
	<ul><li>the point of delivery.</li><li>Landscape Architect retains the right to further observe plant material for size and conditions of balls and root</li></ul>		SHRUBS & GRASSES: Provide shrubs of beight and size indicated or sn
	systems, insects, injuries, and latent defects, and to reject unsatisfactory or defective material at any time during		Provide shrubs of height and size indicated or sp Provide with not less than the minimum number
	progress of work. Remove rejected plants immediately from project site and replace at the Subcontractor's expense with approved materials.		required.
	4. Landscape Architect further retains the right for:	C.	Except as otherwise specified or indicated, provi
	<ul><li>a. Observation of labels and the condition of all items delivered to the site.</li><li>b. Observation of any repairs or replacements necessary.</li></ul>		CONTAINER PLANTS
	c. Observe the staking for all trees and shrubs prior to planting.		Provide plants in containers as sized or specified Plants shall show a vigorous root system, visible
	<ul><li>d. Observation of bed preparation prior to planting of trees and shrubs.</li><li>e. Observation of plant material at end of plant warranty period.</li></ul>	C.	Root system shall not show excess signs of overg
06	DELIVERY, STORAGE, AND HANDLING:		Plants shall appear healthy, with no broken limbs
	Provide freshly dug trees and shrubs. Do not prune prior to delivery. Provide adequate protection of root systems and		TOPSOIL:
- 10	balls from drying winds and sun. Do not bend or bind-tie trees or shrubs in such a manner as to damage bark, break	A.	Soil Mix: ASTM D 5268, pH range of 5.5 to 7, 4 any dimension, subsoil, clay lumps, roots, brush,
	branches, or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery.		plant growth. Contents of the soil should contain
B.	Packaged Material: Deliver packaged materials to the site in their original container with all labels showing weight,	R	than 40% sand. Mix shall contain maximum solu Soil Source: Reuse surface soil stockpiled on the
	analysis, and name of manufacturer intact and legible. Use all means necessary to protect all materials from deterioration before and during deliver, and while stored on site. Protect the installed work and materials of all other	D.	topsoil meeting requirements and amend when n
C	trades.		insufficient. Clean topsoil of roots, plants, sods, growth.
C.	Deliver plant material after preparations for planting have been completed, and plant immediately. If planting is delayed more than 6 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage,	2.06	SOIL AMENDMENTS:
	<ul><li>and keep roots moist as follows:</li><li>1. Heel-in bare root stock. Soak roots in water for 2 hours if dried out.</li></ul>		Spaghnum Peat Moss: Peat moss shall be Canadi
	<ol> <li>Heel-in bare root stock. Soak roots in water for 2 hours if dried out.</li> <li>Set balled stock on ground and cover ball with soil, peat moss, sawdust or other acceptable material.</li> </ol>		not use hypnum, Michigan, or reed sedge peats.
	3. Do not remove container-grown stock from containers until planting time.	В.	Commercial Fertilizer: Fertilizer shall be of the g the local governing authority and the following re-
	4. Periodically water root systems of trees and shrubs stored on site using a fine mist spray. Water as often as necessary to maintain root systems in a moist condition.		1. The grade of fertilizer will be identified accord
C.	Replacements: In the event of damage or rejection, immediately make all repairs and replacements necessary to the		acid (P2O5) and percent water soluble potass identification.
\ <i>~</i>	approval of the Landscape Architect and at no additional cost to the Owner.		2. Fertilizer shall be of a type that can be unifor
)7	JOB CONDITIONS:		<ol> <li>Fertilizer shall be furnished in dry form.</li> <li>Fertilizer may be either homogenized or natu</li> </ol>
A.	Utilities: determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required. Maintain grade stakes set by others until removal is mutually agreed upon by parties		slow-release form.
	concerned.		<ol> <li>Deliver fertilizer in original, unopened and un manufacturer. Store in manner to prevent wet</li> </ol>

B. Excavation: When conditions detrimental to plant growth are encountered, such as pebble fill, adverse drainage

conditions, or obstructions, notify Landscape Architect before planting.

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manufacturer. Store in manner to prevent wetting and deterioration. D. Fertilizer applications shall be provided as follows:

1. Planting Time: Proceed with, and complete landscape work as rapidly as portions of site become available, working f landscape work required.

C. Sequencing an Scheduling:

- orable weather conditions. The planting operations shall not be , when ground is frozen, or during times of other unfavorable climatic e Landscape Architect. The Subcontractor assumes full and complete erations.
- when dormant (before March 15 and after October 15). Such plants may r, subject to the other requirements of the specification. inting shall be March 15 - May 31 and September 15 - October 31st or as
- ablished and prior to planting of lawns, unless otherwise acceptable to the shrubs occur after lawn Work, protect lawn areas and promptly repair
- periods to provide maintenance from date of Substantial Completion. linated with all other work included in this contract and with work being

Article shall not deprive the Owner of other rights the Owner may have ents and shall be in addition to, and run concurrent with, other warranties s of the Contract Documents.

g planting materials for a period of one (1) year after date of Substantial nd unsatisfactory growth, except for defects resulting from lack of e Owner, abnormal weather conditions unusual for warranty period, or

on, the Subcontractor will be responsible for the removal of all staking

- place once, without cost to Owner, and as soon as weather conditions all dead plants and all plants not in a vigorous, thriving condition as and at the end of the warranty period. The plants shall be free of dead or foliage of a normal density, size, and color. ecimens of the same species. Replacements shall be subject to all
- pairs to other site and project features due to plant replacements. Such
- all be plants of the same kind and size specified in the plant schedule. ed. The cost shall be borne by the Subcontractor. After Substantial emoval, loss, or damage due to occupancy of the project site by others, ers, or physical damage by animals, may be approved and paid for by the
- n in a recognized nursery in accordance with good horticultural practice, lanting or root pruning. Provide only healthy, vigorous stock grown s in the locality of the Project and free of disease, insects, eggs, larva, and sions, or disfigurement.
- in planting list and in accordance with dimensional requirements of ANSI uired. Trees and shrubs of larger size than indicated may be used if
- ched waterproof tag bearing legible designation of botanical and common
- used for plants are generally in conformity with "Standardized Plant n conformity with the names accepted in nursery trade. nform to the "American Standard for Nursery Stock", ANSI Z60.1-1986.
- pment in a manner that will not cause damage to the branches, shape and anting. All plant material being transferred more than two miles shall be
- es, which have a damaged or crooked leader or multiple leaders, unless h abrasion of bark, sunscalds, disfiguring knots, or fresh cuts of limbs etely calloused will be rejected.
- e in a normal position. If a range of size is given, no plants shall be less 0% of the plants shall be as large as the upper half of the range specified. num size acceptable and are the measurements after pruning where asurements specified, but do not possess a normal balance between
- and shall conform to measurements specified in the Plant Schedule except ed if approved by the Landscape Architect. Use of such plants shall not are approved, the ball of earth shall be increased in proportion to the size
- chedule shall be adequately balled with firm natural balls of earth of a ied in ANSI 60.1-1986. Balls shall be firmly wrapped with burlap. All be drum laced. No balled plants shall be planted if the ball is cracked or
- in lieu of balled and burlapped deciduous plants subject to specified
- all times from sun and from drying winds. All balled and burlapped y upon delivery shall be set on the ground and well protected with soil or remain unplanted for longer than 3 days after delivery. stem trees with straight trunk and intact leader, free of branches to a l kind of trees required.
- e are required, provide trees with single stem, branched or pruned
- trees with three canes starting from the ground. ovide bare root trees. Where indicated as "B&B," provide balled and
- n lieu of balled and burlapped deciduous trees, subject to the specified

## specified.

- er of canes required by ANSI Z60.1 for the type and height of shrub vide container grown shrubs.
- ble when container is removed.
- ergrowth. nbs. Leaves shall appear full with no apparent sun or wind scald.
- , 4 percent organic material minimum, free of stones 1/2 inch or larger in sh, weeds, weed seed, and other extraneous or toxic materials harmful to ain no more than 15% Silt and 15% clay. Soil should also contain no less oluble salts of 500 PPM.
- the site where available. Verify suitability of surface soil to produce n necessary. Supplement with imported topsoil when quantities are s, stones, clay lumps, and other extraneous materials harmful to plant
- adian Sphagnum Peat Moss, which is a light brown, fluffy material. Do
- e grade, type and form specified below and shall comply with the rules of requirements
- cording to the percentage of nitrogen (N), percent available phosphoric assium (K2O), in that order and approval will be based on that
- formly distributed either by hand or application equipment.
- atural organic with at least 25 percent of the total nitrogen in a
- 5. Deliver fertilizer in original, unopened and undamaged containers showing weight, analysis and name of

- 1. For trees and shrubs: Fertilizer shall be Agriform 20-10-5 Planting Tablets or approved equal, and shall be incorporated according to the manufacturer's directions and at the following rates:
- a. Trees: Use 1 21-gram tablet for each 1/2-inch of trunk diameter for each foot of height or spread. Insert 21-gram
- tablets around the dripline b. Shrubs: Use 1 to 2 tablets for each 1 foot of height or spread of shrubs and large perennial grasses.
- 2.07 MISCELLANEOUS MATERIALS:
- A. Steel Edging: Commercial steel edging fabricated in sections with loops pressed from or welded to face to receive stakes. Edging to be Col-Met Steel Landscape Edging (or approved equal), Collier Metal Specialties, Inc., Atlanta, GA., 1-800-829-8225; 1/8" thick x 4" wide x 10' lengths, hot rolled low carbon steel (ASTM-A-36, ASTM-A-283, ASTM-A-569), treated with rust preventative and factory finished, (submit sample). Provide minimum 12" integral anchor stakes.
- B. Shredded hardwood mulch: Double ground aged brown hardwood mulch.
- C. Tree Wrap: Material used in wrapping tree trunks shall be waterproof crepe paper or burlap strips as made and sold for this purpose and shall not be less than 4" or more than 8" wide having qualities to resist insect infestation. Twine for tying shall be a lightly tarred medium or coarse sisal yarn or approved equal.
- D. Pre-Emergent Herbicide. Provide pre-emergent herbicide Pre M 60 DG (granular). The Landscape Architect will consider an "equivalent" of the brand name specified. Provide the Landscape Architect with a complete description, literature, test reports, etc. on the proposed "equivalent". The burden of proof regarding the "equivalent" is upon the Subcontractor. The Landscape Architect will accept the pre-emergent herbicide based on brand name and visual inspection for condition.
- E. Tree Stakes and Guys:
- 1. All trees shall be staked with a minimum of 2 metal "T" posts. Stakes shall be approximately 2" wide and 6-6.5 feet long. Stakes are to be driven a minimum of 2 feet into undisturbed stable earth.
- 2. Tree Ties: An acceptable tree tie is one that is easily adjustable, strong in all weather, and is easily attached and removed. Hose and wire are not acceptable for staked trees. Provide the following or approved equal: a. "Cinch Ties"
- b. "Adj.-A-Tye". Heavy weight only, a plastic chain twist tie, OR "Plastic Binder Tye", tie with tapered beads that snap-lock
- c. Other tree tying materials may be accepted upon submitting a sample, product information, and plant tying methods to the Landscape Architect for approval.
- F. Water: Upon request of the Subcontractor, the Owner may approve the use of water from existing hydrants or working irrigation system for this work. The Owner may pay for the cost of the water. The Subcontractor shall provide all needed hose, sprinkler heads and other appurtenances. If the Subcontractor provides his own water, it shall not contain material injurious to plant growth.
- G. Anti-Erosion Mulch: Provide clean, dry straw of winter wheat, rye, oats, or barley.
- H. Anti-Desiccant: Emulsion type, film-forming agent designed to permit transpiration, but retard excessive loss of moisture from plants. Deliver in manufacturer's fully identified containers and mix in accordance with manufacturer's instructions.
- I. Biostimulant: The Subcontractor shall utilize an organic, biological fungi for soil prep. The material shall be granular and applied per manufacturer's recommendation. Myke Mycorrhizae or approved equal.
- J. All other materials, not specifically described but required for a complete and proper installation or construction, shall be as selected by the Subcontractor subject to the approval of the Landscape Architect.
- PART 3 EXECUTION
- 3.01 SURFACE CONDITIONS
- A. Inspection: 1. Prior to all landscape installation, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- Weeds that have emerged or persisted shall be removed or eradicated.
- 3. Verify that planting may be completed in accordance with the original design and the referenced standards.
- B. Discrepancies: 1. In the event of discrepancy, immediately notify the Landscape Architect.
- 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved. 3.02 PREPARATION FOR PLANTING OF TREES, SHRUBS AND PLANT BEDS:
- A. Planting Soil Preparation:
- 1. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to
- plant growth.
- 2. Loosen subgrade of planting areas to a minimum of 8 inches. 3. Mix soil amendments and fertilizers with topsoil at rates indicated. Delay mixing fertilizer if planting does not
- follow placing of planting soil within two (2) days. 4. Grade planting areas to a smooth, uniform surface place with loose, uniformly fine texture. Roll, rake and remove
- ridges/depressions to meet finish grades.
- 5. Schedule of Plantings Soil Mixture Requirements a. For planting beds, provide not less than the following quantities of specified materials:
  - (1) Loose peat humus by volume: 1part
  - (2) Well-rotted composted manure by volume: 1 part
  - (3) Topsoil (as defined in this specification): 2 parts

  - (4) Fertilizer: Incorporate 3 lbs/100sf
- b. For backfill for trees provide specified materials in not less than the following quantities:
- (1) Loose peat humus by volume: 1 part
- (2) Well-rotted cow manure by volume: 1 part
- (3) Topsoil (as defined in this specification): 3 parts
- (4) Place Agriform tablet (or approved equal) in bottom of tree pit.

B. Unless directed by the Landscape Architect, the indication of a plant on the Planting Plan is to be interpreted as

including the prepping the landscape bed, digging of a hole, furnishing of a plant of the specified size, the work of planting, wrapping and other activities where called for.

- C. Planting Coordination:
- 1. Consult the Plant Schedule for type and size of plants.
- 2. The Subcontractor shall be responsible for selection and tagging at nurseries stocking the specified materials.
- 3. Subcontractor shall inform the Landscape Architect three (3) days in advance of when planting will commence, and of anticipated delivery date of material and will furnish an itemized listing of actual quantities of plant materials to be delivered. Failure to notify the Landscape Architect in advance, in order to arrange proper scheduling, may result in loss of time or removal of any plant or plants not installed as specified or directed.
- D. Plant Location Staking:
- 1. The Subcontractor shall stake on the ground the beginning and ending points of all straight rows of plant materials. Rows will be parallel to adjacent walks, walls, or curbs. 2. The Subcontractor will stake locations of each plant in all random arrangements of plant materials (with the
- exception of groundcovers, and annual and perennial flowers) or may set the plants in their intended location, according to the arrangements shown on the plans.
- 3. The Landscape Architect will observe all plant locations. The Subcontractor shall not begin excavating plant pits until plant locations have been approved.
- 4. In case underground obstruction or utilities are encountered, locations shall be changed under the direction of the Landscape Architect without extra charge to the Owner.
- 3.03 EXCAVATION FOR TREES AND SHRUBS
- A. Holes for trees and shrubs shall be per the detail. Thoroughly spade slice the walls and the floor of all planting pits. B. Testing Plant Materials Holes: If stone, underground construction work, tree roots, poor drainage or obstructions are encountered in the excavation of plant pits, alternate locations may be selected by the Landscape Architect. Where locations cannot be changed as determined by the Landscape Architect, submit cost required to remove the obstructions to a depth of not less than 6 inches below the required pit depth.
- C. Excavate pits, beds, and trenches with vertical sides and with bottom of excavation slightly raised at center to provide proper drainage. Loosen hard subsoil in bottom of excavation:
- 1. For bare-root trees and shrubs, make excavations as detailed.
- 2. For balled and burlapped trees and shrubs, make excavations as detailed.

C. For pit- or trench-type backfill, mix planting soil prior to backfilling and stockpile at site.

3. Move or set large specimen trees with crane or other recognized tree moving equipment.

- 3. For container grown stock, excavate as specified for balled and burlapped stock, adjusted to size of container width and depth.
- 4. Obstructions: If rock, underground construction, or other obstructions are encountered in excavation for planting of trees or shrubs, notify Landscape Architect. New locations may be selected by Landscape Architect, or Change Order may be issued to direct removal of obstructions to depth of not less than 6 inches below required planting depth.
- 3.04 TREE & SHRUB PLANTING

D. Setting and Backfilling:

planting soil within a few days.

placing final layer of backfill.

remove containers so as not to damage root balls.

A. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth. B. Mix soil amendments and fertilizers with topsoil. Delay mixing of fertilizer if planting will not follow placing of

1. Set balled and burlapped stock on layer of compacted planting soil mixture, plumb and in center of pit or trench with

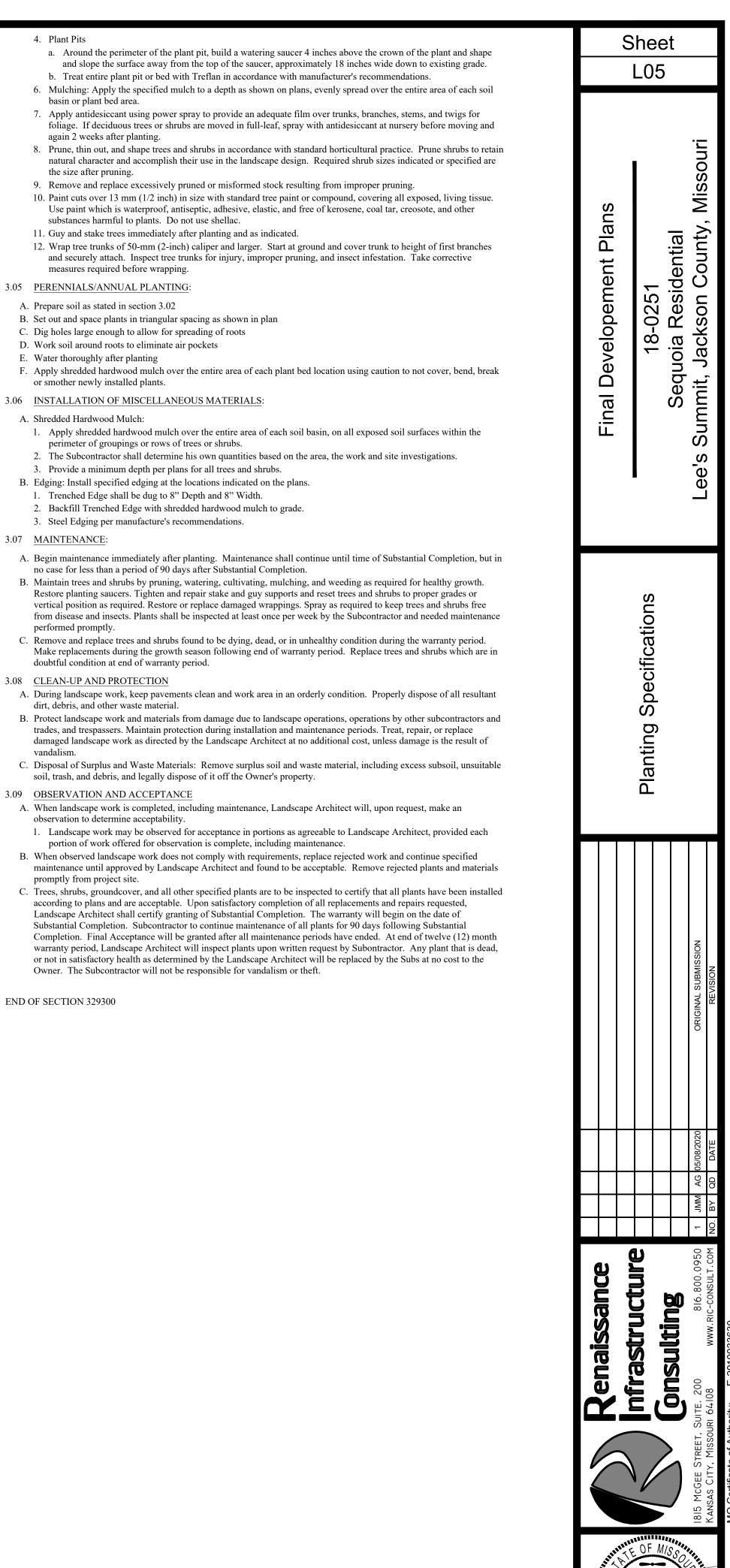
top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides and tops of balls, but

do not remove from under balls. When set, place additional backfill around base and sides of ball, and work each

layer to settle backfill to eliminate voids and air pockets. When excavation is approximately two-thirds full, water

thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after

2. Set container grown stock as specified for balled and burlapped stock, except cut cans on two sides. Carefully



ANDREY

GABBERT

NUMBER

LA-200701327

T. Andrew Gabber MO#1A-200701327

## SECTION 329200 - LAWNS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. This Section includes the following areas of Work:
- 1. Fine grading and preparing lawn areas.
- 2. Furnishing and applying topsoil.
- 3. Furnishing and applying limited soil amendments.
- 4. Sodding new lawn areas.
- 5. Reconditioning existing lawn areas.
- 6. Replanting unsatisfactory or damaged lawns.
- 7. Maintenance.
- B. Related Work Specified Elsewhere:
- 1. Trees and Shrubs: SECTION 329300
- 1.2 REFERENCES
- A. Applicable Standards:
- 1. American Society for Testing and Materials (ASTM) Equivalent AASHTO standards may be substituted as approved.
- 1.3 SUBMITTALS
- A. Certification of each seed mixture for sod, identifying the sod source, including name and telephone number of supplier. Seed for sod must be sod quality and is to be gold tag standards with 0% other crop seed and 0% weed seed.
- B. Certification of each seed type for Native Grass mixture identifying the seed source, including name and telephone number of supplier
- C. Landscape Architect has final approval of sod grower, no exceptions
- D. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and address of architects and owners, and other information specified.
- . Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of the following materials with requirements indicated.
- 1. Agronomic and biological analysis of existing surface soil.
- 2. Agronomic and biological analysis of all imported topsoil.
- F. Maintenance instructions recommending procedures to be performed by Owner for maintenance of landscaping during an entire year. Submit before expiration of required maintenance periods.
- 1.4 QUALITY ASSURANCE
- A. Qualifications: A qualified subcontractor shall employ or provide a qualified installation manager who meets any or all of the required qualifications;
- 1. Bachelor of Science Degree in Horticulture, Botany, Soil Physics, Agronomy, General Agriculture, Agricultural or Biological Engineering, or a related field.
- 2. An individual with field experience as approved by the Landscape Architect or Registered Engineer.
- B. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful turf establishment.
- 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that turf planting is in progress. C. Testing Agency Qualifications: To qualify for acceptance, an independent testing agency must demonstrate to Landscape Architect's
- satisfaction, based on evaluation of agency-submitted criteria conforming to ASTM E 699, that it has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.
- D. Topsoil Analysis: Furnish a soil analysis made by a qualified independent soil-testing agency stating percentages of organic matter by Loss on ignition, inorganic matter (proportion of silt, clay, and sand), deleterious material including biological contamination, pH, mineral and plant-nutrient content of topsoil, and cationic exchange capacity.
- 1. Report suitability of topsoil for grass growth from horticulturist. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce satisfactory topsoil.
- DELIVERY, STORAGE AND HANDLING
- A. Sod: Harvest, deliver, store, and handle sod according to the requirements of the Turfgrass Producers International (TPI) "Specifications for Turfgrass Sod Materials and Transplanting/Installing."
- B. Native Seed: Delilver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from 2.6 FERTILIZER (Turfgrass only, do not fertilize Native Seed areas) deterioration during delivery and while stored at site.
- 1.6 COORDINATION AND SCHEDULING
- A. Planting Season: Install sod during normal planting seasons for type of lawn work required. Correlate planting with specified maintenance periods to provide required maintenance from date of Substantial Completion.
- B. Native Seed Planting Season: Spring Planting Season: April 1st June 1st; Dormant Planting Season: December 15th March 31st. Planting at any other time will require the use of a cover crop to be approved by Owner or Landscape Architect.
- C. Weather Limitations: Proceed with work only when existing and forecast weather conditions are suitable for work.
- 1.7 MAINTENANCE
- A. Lawns/turf areas: Begin maintenance of turfgrass immediately after each area is planted and continue until acceptable establishment but for no less than the following periods:
- 1. Sodded Lawns: 90 days after date of Substantial Completion.
- 2. Seeded Lawns: 90 days after date of Substantial Completion
- 3. Native Grass Areas: 12 Months after date of Substantial Completion.
- B. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting and other operations per this Specification
- C. Watering- Subcontractor shall be responsible of watering the sod as required by this Specification. Subcontractor may use irrigation system to accomplish watering. Subcontractor shall be responsible for coordinating with irrigation contractor for scheduling of irrigation system to provide required water needs.
- D. Post-fertilization: Apply fertilizer to lawn after first mowing and when grass is dry.
- PART 2 -PRODUCTS
- 2.1 TOPSOIL
- A. Standard Topsoil: ASTM 5268, pH range 5.5 to 7. Free of stones 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth
- B. Compost Soil Blend: As located in plan, areas denoted as Compost Soil Blend shall be provided as 50% Standard Topsoil or Native Topsoil and 50% Compost for a depth of 12". pH range shall be 5.5 to 7.
- 1. Topsoil Source: Reuse surface soil stockpiled on the site where available. Verify suitability of surface soil to produce topsoil meeting requirements and amend when necessary. Supplement with imported topsoil when quantities are insufficient. Imported topsoil shall meet the requirements of this specification for composition. Clean all topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth.
- 2. Compost Soil Blend shall have a minimum infiltration rate between 0.25" to 0.5" per hour.
- 2.2 LIMITED SOIL AMENDMENTS
- A. Herbicides: EPA registered and approved, of type recommended by manufacturer and approved by the Landscape Architect.
- B. Compost: Well-composted, stable and weed-free organic matter, pH range of 5.5-8; moisture content 35-55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content less than 4 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings.
- C. Water: Potable.

2.3 SOD

- A. Sod: Certified turfgrass sod complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses. Provide viable sod of uniform density, color, and texture of the following turfgrass species, strongly rooted, and capable of vigorous growth and development when planted.
- 1. Species: Provide sod of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on the following Schedule. The seed used will be of gold tag quality.
- 2. If gold tag is not available then seed must be of the highest quality blue tag certified available.
- 3. Landscape Architect has final approval, no exceptions.
- 4. All Turf-Type Fescues shall have a minimum 70% average endophyte level.

## 5. Sodded lawn areas to have a blend of 90% Turf-Type Tall Fescue and 10% Kentucky Bluegrass or approved equal.

- B. Provide sod in uniform thickness of 16 mm (5/8-inch), plus or minus 6 mm (1/4-inch), measured at time of cutting and excluding top growth and thatch. Strips shall be of supplier's standard size of uniform length and width with maximum 5% allowable deviation in either length or width. Broken or torn pads, or pads with uneven ends are not acceptable.
- C. Sod pads shall be capable of supporting their own weight and retaining size and shape when pad is suspended vertically from a firm grasp on upper 10% of pad.
- D. Handle sod with care to prevent loss of native soil from roots.
- 2.4 GRASS SEED:
- A. Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America and as required below.
- B. Be labeled according to the U.S. Department of Agriculture Federal Seed Act and shall be furnished in containers with tags showing seed mixture, purity, germination, weed content, name of seller, and date on which seed was tested.
- C. Seed Mix: 10% Bluegrass & 90% Turf-Type Tall Fescue, composed of an equal mix of three or four compatible species of bluegrass and one or two species of fescue. The mixture shall not include any varieties of the slower growing "Dwarf" fescue types. 1. Fescue Varieties, or approved equal
- Apache, Arid, Austin, Bonanza, Carefree, Cheiftan, Cimmaron, Cochise, Falcon, Guardian, Houndog, Jaguar II, Maverick II, Mustang, Olympic, Phoenix, Rebel II, Rebel 3D, Safari, Shenandoah, Thoroughbred, Titan, Tribute, Vegas
- 2. Bluegrass Varieties, or approved equal
- Asset, Kenblue, Midnight, Nassau, Ruby II, Troy
- 3. Moldy seed or seed that has been damaged in storage shall not be used.
- 4. Engineer shall have final approval of all seed blends and mixtures.
- 2.5 NATIVE GRASSES (When Required by Plan)
- A. Fresh, clean, dry, pure-live seed complying with Kansas Department of Agriculture laws for purity, germination, and noxious weed tolerances:
- 1. Seed Components: Provide seed of grass and forb species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on Schedules at the end of this Section. Seed lots, unblended, shall be provided to horticulturist in original unopened containers for agro-histological determination and re-testing. The Master label shall be produced by the horticulturist, and shall be sealed according to the appropriate laws and regulations
- 2. All seed must be tested by a registered seed technologist per AOSA methods and meet all requirements established by the Department of Agriculture. The contractor will provide documentation with the seed shipment for the following information; a. State of Origin
- b. Year of Harvest
- c. Genus species Identification d. Seed Lot #
- e. Packaged Quantity
- f. Identification of Seed Supplier
- g. Supplier Certification Number
- h. State of Supplier Registration
- i. Percent PLS Per Seed Lot j. Percent Germination
- k. Percent Hard Seed
- 1. Percent Foreign Matter
- m. Percent Weed Seed
- n. Identification of Noxious Weed Seed o. Date of Seed Testing
- p. Identification of Seed Testing Company
- 3. All native seed shall be primed for improved germination.
- 4. Landscape Architect has final approval, no exceptions.
- 5. Seed Source: Shall be submitted to Landscape Architect for approval
- B. Detention Basin Seed Mix: 9.44 lbs / Acre
- Detention Basin Seed Mix by Prairie Moon Nursery (or Approved Equal). Ph: 866-427-8156

B. Deliver to site in labeled bags or containers.

2.7 MYCORRHIZAL INOCULANT

EXECUTION

dust to adjacent properties and walkways

Do not create a muddy soil condition.

G. Allow for sod thickness in areas to be sodded.

and products.

2.8 STRAW MAT

3.1 EXAMINATION

3.2 PREPARATION

operations

3.3 SOIL PREPARATION

PART 3 -

C. Native Seed Cover Crop

- D. Cover Crop: As approved by Landscape Architect, Contractor shall submit mix for approval

- 3. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
- 4. Remove waste material, including grass, vegetation, and turf, and legally dispose of it off the Owner's property.
- 3.4 SEEDING NEW LAWNS:
- A. Do not use wet seed or seed which is moldy or otherwise damaged in transit or storage.
- B. Sow seed with a Brillion type seeding machine or where applicable and restricted by steep slopes or other areas not accessible to the seeding machine, broadcast or drop seed methods may be used. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in 2 directions at right angles to each other, and 3 directions in high maintenance areas, as directed by the Engineer.
- C. Sow not less than rate of 4 pounds per 1,000 square feet.
- D. Rake seed lightly into top 1/8\_inch of soil, roll lightly, and water with fine spray.
- E. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.
- F. Protect seeded slopes exceeding 1:6 against erosion with erosion-control blankets installed and stapled according to manufacturer's recommendations
- G. Protect seeded areas with slopes less than 1:6 against erosion by spreading mulch as specified after completion of seeding operations. Spread uniformly to form a continuous blanket over seeded areas. Spread by hand, blower, or other suitable equipment.
- H. Protect seeded areas against hot, dry weather or drying winds by applying peat mulch within 24 hours after completion of seeding operations. Soak and scatter uniformly to a depth of 3/16 inch thick and roll to a smooth surface.
- I. Seasonal Limitations:
- 1. Perform seeding only during the following seasons:
- a. Fall Seeding: September 15th to October 1st.
- b. Spring Seeding: March 15th to May 15th
- c. Recommend seeding when temperatures ranging from 50 degrees Fahrenheit to 70 degrees Fahrenheit for a minimum 6 week period.
- J. Methods of Application:
- 1. Dry Seeding: Spreader or seeding machine.
- 2. Hydroseeding: Mix seed, fertilizer and pulverized mulch with water and constantly agitate. Do not add seed to water more than 4 hours before application:
- a. On slopes of 2 horizontal to 1 vertical or flatter, apply seed separately from fertilizer. Cover seed with soil to an average depth of 13 mm (1/2 inch) by raking or other approved methods.
- b. On slopes steeper than 2 horizontal to 1 vertical, seed and fertilizer may be applied in a single operation. Incorporation into the soil will not be required.
- 3.5 SODDING NEW LAWNS
- A. Do not place sod during a drought or during the period from June 15 to September 15, except as authorized by the Landscape Architect.
- B. Lay sod within 24 hours from time of stripping. Do not lay dormant sod or if ground is frozen.
- C. Sod shall be moist at the time it is placed.
- D. Lay sod strips along contour lines, by hand, commencing at the base of the area to be sodded and working upward:
- 1. Carefully lay sod to produce tight joints. Butt ends and sides of sod strips; do not overlap.
- 2. Stagger transverse joints of sod strips.
- 3. Work from boards to avoid damage to subgrade or sod.
- 4. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod, removing excess to avoid smothering adjacent grass.
- E. Water sod with fine spray immediately after planting. During first week, water daily or more frequently as necessary to maintain moist soil to depth of 100 mm (4 inches).
- 3.6 RECONDITIONING LAWNS:
- A. Recondition lawn areas damaged by construction operations, including storage of materials or equipment and movement of vehicles. Also recondition lawn areas where settlement or washouts occur or where minor regrading is required. Recondition other existing lawn areas where indicated.
- B. Provide fertilizer, sod, and soil amendments as specified for new lawns and as required to provide satisfactorily reconditioned lawn. Provide new planting soil as required to fill low spots and meet new finish grades.
- C. Cultivate bare and compacted areas thoroughly to provide a good, deep planting bed.
- D. Remove diseased or unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from Subcontractor's operations including oil drippings, stone, gravel, and other construction materials. Replace with new topsoil.
- E. Where substantial lawn remains (but is thin), mow, rake, aerate if compacted, fill low spots, remove humps and cultivate soil. fertilize, and seed. Remove weeds before seeding or, if extensive, apply selective chemical weed killers as required. Apply a seed-bed mulch, if required, to maintain moist condition.
- F. Water newly planted areas and keep moist until new grass is established.
- 3.7 SEEDING COVER CROP & NATIVE GRASSES:
- A. Sow seeds using seed drill (Truax-type) that accurately meters the seed types and mixes all seeds uniformly during seeding. It should have, at the minimum, two seed boxes to separate fine seeds from large/fluffy seeds. This seed drill should also be equipped with disc furrow openers and a no-till trash plow assembly, which will compact the soil directly over the drill rows. The maximum row spacing for drill seeding should be 8 inches. Fine seeds shall be dropped onto the ground from the fine seed box, while large/fluffy seed should be placed to obtain final planting depth of 1/4-1/2". The path of the drill seeding shall be done at a right angle to that of the drainage patterns.
- 1. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
- B. Protect all native grass areas on slopes 4:1 and greater using straw mat erosion control blanket installed and stapled according to manufacturer's recommendations
- A. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period until lawn is established.
- 3.9 MAINTENANCE (SEED & SOD):
- A. Mow grass to a height of 3 inches as soon as there is enough top growth to cut with mower. Remove no more than 30% of grass leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted.
- B. Remove weeds by pulling or chemical treatment.
- C. Perform maintenance throughout the 90 day maintenance period.
- D. Sodded Areas:
- 1. Thoroughly water daily for a period of 15 days after placing and to a minimum of 1-inch per week thereafter.
- 2. Maintain sod in good live condition. Replace any sod not in good growing condition with fresh live sod.
- 3. Water thoroughly whenever sod evidences excessive drying.
- E. Seeded Areas:
- 1. Thoroughly water seeded areas daily to keep seeds moist until germination. After seeds have germinated, continue watering daily until the first mowing. Watering shall be in amounts enough to wet seeds and surrounding soil, but not cause erosion or disposition of seeds.
- 2. Repair any portion of the seeded surface which becomes gullied or otherwise damaged. Reseed as required.
- F. Apply second fertilizer application after first mowing and when grass is dry. Use fertilizer which will provide not less than 1 lbs of actual nitrogen per 1,000 square feet of lawn area.
- 3.10 MAINTENANCE (NATIVE GRASSES) (When Required by Plan)
- A. Begin maintenance of native grass areas immediately after each area is planted and continue until established and accepted, but for not less than the following periods:
- B. Native grass: 12 MONTHS after date of Substantial Completion
- 1. The Installer shall be responsible for the proper care until verification that all plant materials are present in the density and health to ensure self-maintenance.
- 2. Maintain and establish native grasses by mowing, weeding, trimming, replanting, and other operations as stated below. Re-grade erosion rills, replant bare or eroded areas, and re-mulch to produce a uniform prairie
- A. When lawn Work is Substantially Complete, including maintenance, Landscape Architect and Owner will, upon request, make an inspection to determine acceptability
- 1. Lawn Work may be inspected for acceptance in parts agreeable to Owner, provided Work offered for inspection is complete, including maintenance.

- 1. The use of a Cover Crop to help with the establishment of Native Grasses shall be approved by the Landscape Architect prior to use. Contractor shall submit Cover Crop seed mixes prior to installation.
- D. Commercial fertilizer of neutral character, with some elements derived from organic sources, containing not less than 4 lbs. of actual nitrogen per 1,000 square feet of lawn area. Provide nitrogen in form that will be available to the lawn under the following products or approved equal. During the maintenance period the following fertilizers shall be used or approved equal:
- 1. Starter Fertilizer: Dyna Green Starter 12-20-06 with Fertil Blend. Total nitrogen: 7.83% ammoniacal, 4.17% urea; Phosphate Ammonium phosphate 20%; Potash MOP: 6%; Iron: 1%; SGN 200
- 2. Spring Fertilizer Dyna Green Long Lasting 22-0-8 with 50% UMAXX, 1,757% Viper & Fertil Blend. Total nitrogen: 22% urea with slowly available nitrogen from 50% UMAXX®; Potash MOP: 8%; Iron: 1%; SGN 200. Apply March to June. 3. Fall Fertilizer: Dyna Green Winterizer 18-0-9 with 1.434% Surge & Fertil Blend. Total nitrogen: 18% urea; Potash MOP: 8%; Iron: 1%; SGN 200. Apply September to October.
- A. The Subcontractor shall utilize an organic, mycorrhizal inoculant for soil prep. The material shall be granular and applied per manufacturer's recommendation. M-Roots w/ Mycorrhiza or approved equal. For exact finish, insert names of coating manufacturers 3.8 PROTECTION:
- A. Provide a biodegradable single net, two sided organic straw mat with functional longevity of 10-12 months by Greenfix Amerca, Product WS072 Double Net Straw or Approved Equal. B. Utilize Straw Mat within Native Seed areas on slopes greater than 4:1.
- A. Examine areas to receive lawns for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.
- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne
- A. Dispose of any growth, rocks, or other obstructions which might interfere with tilling, seeding, sodding, or later maintenance operations. Remove stones over  $38 \text{ mm} (1_{1/2} \text{ inches})$  in any dimension and sticks, roots, rubbish, and other extraneous matter.
- B. Thoroughly loosen and pulverize topsoil to a depth of at least 100 mm (4 inches) for all standard turfgrass areas. Areas denoted as "Compost Soil Blend", shall be loosened and amended to a depth of 12 inches C. Grade lawn areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions to
- meet finish grades. Limit fine grading to areas which can be planted within immediate future. D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry off before planting of lawns.
- E. Restore prepared areas to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.
- F. Spread top soil mixture to depth required to meet thickness, grades, and elevations indicated after light rolling and natural settlement.
- H. Preparation of Unchanged Grades: Where lawns are to be planted in areas that have not been altered or disturbed by excavation, 3.11 ACCEPTANCE OF LAWNS: grading, or stripping operations, prepare soil for lawn planting as follows:
- 1. Remove and dispose of existing grass, vegetation, and turf. Do not turn over into soil being prepared for lawns. 2. Till surface soil to a depth of at least 6 inches. Apply required soil amendments and initial fertilizers and mix thoroughly into

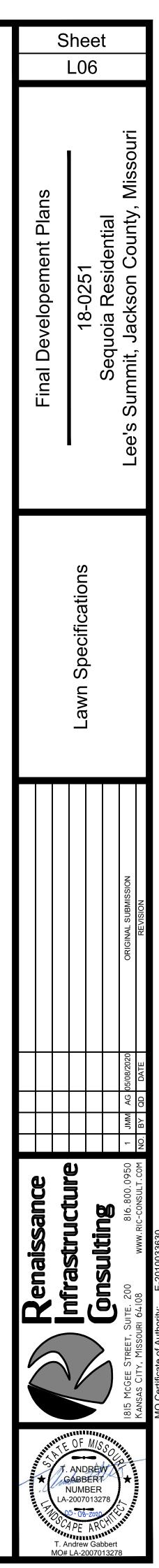
top 4 inches of soil. Trim high areas and fill in depressions. Till soil to a homogenous mixture of fine texture.

- B. Replant rejected work and continue specified maintenance until re-inspected by Landscape Architect and Owner and found to be acceptable.
- C. Sodded lawns will be acceptable provided requirements, including maintenance, have been complied with and healthy, well-rooted, even-colored, viable lawn is established free of weeds, open joints, bare areas, and surface irregularities.
- D. Native Grass Stands (When Required by Plan)
- 1. An acceptable native grass stand will contain no less than 5 healthy mature or developing plants per square foot with a population distribution per 10,000 square feet representative of ratios in the original blend. The result of maintenance shall be that weeds are being controlled through competition with the desired plants, and that mowed bio-mass is not accumulating in such a manner to be detrimental to existing plant materials as determined by the Landscape Architect.
- 2. An acceptable native grass stand shall control erosion through root mass development. The occurrence of rills and gullies shall be unacceptable.

3.11 CLEANUP:

A. Promptly remove soil and debris created by lawn Work from paved areas. Clean wheels of vehicles prior to leaving Site to avoid tracking soil onto surfacing of roads, walks, or other paved areas.

END OF SECTION 329200



	ON 328400 - IRRIGATION SYSTEMS		products of type shall be from a single manufacturer as listed.
<u>PART</u> 1.01	<u>1 - GENERAL</u> SUMMARY:	2.02	PIPES, TUBES, AND FITTINGS:
	This Section includes piping, valves, sprinklers, specialties, and wiring for automatic-control irrigation systems.		<ul> <li>Refer to Part 3 "Piping Applications" Article for installation of pipe, fitting, and jo</li> <li>PVC, Pressure-Rated Pipe:</li> </ul>
	REFERENCE STANDARDS	2.	1. ASTM D2241, CL 200 SDR-21.
	ASTM B32 - Standard Specification for Solder Metal; 2008.	C.	Pipe Risers at Valves: 160 psi PVC pipe.
	ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes; 2010. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2009.		. PVC Socket fittings, CL 200, ASTM D2467.
	ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and	E.	Sleeve Material: PVC - Schedule 80, Minimum size shall be 2 times the irrigation diameter
	Fittings; 2004 (Reapproved 2011).	2.03	JOINING MATERIALS:
	ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series); 2009.	A.	Solvent Cement (PVC Piping):
	ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2004		1. Primer and solvent conforming to ASTM D2564-02.
	(Reapproved 2009). NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association;		OUTLETS
		А.	. Rotary Type Sprinkler Head: Pop-up type with screens; fully adjustable for flow ar
1.03	DEFINITIONS:	B.	symbol designating degree of arc and arrow indicating center of spray pattern. Pro Spray Type Sprinkler head: Pop-up type with in-stem pressure regulator system. Po
А.	Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during		Provide nozzel with spray pattern as required to minimize waste. Adjustable patter
			for optimum throw. Provide Head to Head coverage
	Irrigation Main Piping: Downstream from backflow preventer to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.	C.	. Drip Specialties
	Service Line Piping: Downstream from point of connection to backflow preventer.		1. Drip Zone Control Kit:
D.	The following are industry abbreviations for plastic materials:		<ul> <li>a. Factory assembled kit for controlling low-flow irrigation zones comprised (1)</li> <li>Medium-flow remote control valve with 'double knife' diaphragm (1)</li> </ul>
	1. ABS: Acrylonitrile-butadiene-styrene plastic.		pilot flow, external bleed and internal bleed for manual operation.
	2. FRP: Fiberglass-reinforced plastic.		1) Pressure regulator with plastic body capable of maintaining outlet p
	<ol> <li>PE: Polyethylene plastic.</li> <li>PP: Polypropylene plastic.</li> </ol>		2) Filtration provided by either:
	5. PVC: Polyvinyl chloride plastic.		<ol> <li>Inline Wye Filter of heavy-duty glass-filled nylon material with (factory-installed).</li> </ol>
	6. HDPE: High Density Polyethylene plastic		<ul><li>2)b. Inline Basket filter with threaded top section containing an incindicate when the filter is full. Provide with factory-installed</li></ul>
	SYSTEM REQUIREMENTS:		2. Manufacturers
	Location of Watering System and Specialties: Irrigation Contractor to provide shop drawings showing the minimum		a. Rainbird, Toro, Hunter, Netafim, Approved Equal
	coverage per layout. Actual locations may vary per field installation, it shall be the responsibility of the irrigation contractor to provide water coverage of areas indicated on the plans.		3. Landscape Dripline
	to provide water coverage of areas indicated on the plans. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties, unless		a. Flexible PE tubing with pre-installed pressure-compensating emitters with outside diameter. Flow rate shall be 0.6 gallons-per-hour.
	otherwise indicated:		<ul><li>b. Manufactures: As listed above</li></ul>
	1. Irrigation Main Piping: 200 psig.		c. Warranty: 5 years free from original defects in materials and workmanship
	2. Circuit Piping: 200 psig.		cracking.
	<u>SUBMITTALS</u> :		4. Compression Fittings:
A.	<ol> <li>Product Data: Include pressure ratings, rated capacities, and settings of selected models for the following:</li> <li>General-duty valves, Specialty valves, Control-valve boxes, Irrigation specialties.</li> </ol>		<ul> <li>uV-resistant ABS fittings with Buna rubber seal capable of accepting 1/2-i diameter.</li> </ul>
	<ol> <li>Controllers. Include wiring diagrams.</li> </ol>		b. Manufacturers: As listed above
	3. Control wiring. Include splice kits.		5. Air Vacuum Relief Valve:
B.	Shop Drawings: Irrigation Contractor shall provide design documentation for approval prior to installation. Shop drawings		a. Plastic housing with rustproof materials designed for use with dripline tubin
	shall include but not be limited to the following information: Indicate piping layout to water source and tap (including		b. Manufactures: As listed above
	coordination & reuse of existing system), coordinate location of sleeves under pavement, electrical routing and wire		6. Flush Valve:
	diagrams, plant and landscaping features, site structures, schedule of fittings, zone and system calculations, drawing scale & north arrow and all component details.		<ul><li>a. Plastic ball valve featuring PVC body and ball construction, EPDM Seat Set</li><li>b. Manufacturers: As listed Above</li></ul>
	Field quality-control test reports. Irrigation contractor should perform flow test to verify available pressure.	2.05	SHUTOFF & GENERAL-DUTY VALVES:
D.	Operation and Maintenance Data: For irrigation systems, to include in emergency shut down, operation, and maintenance	A.	Cast Brass Gate Valves: Resilient-seated, nonrising-stem, cast brass body and bor
	manuals. Include data for the following:		stem and stem nut.
	1. Automatic-control valves.		1. Maximum Working Pressure: 200 psig.
	<ol> <li>Controllers (if required).</li> <li>Winterization procedures.</li> </ol>		<ol> <li>End Connections: Threaded ends.</li> <li>Handler David ends.</li> </ol>
	<ol> <li>System start-up, shut-down, winterization, operation and maintenance.</li> </ol>		<ol> <li>Handle: Brass cross.</li> <li>Manufacturers:</li> </ol>
	5. Final Valve Schedule List.		a. Matco-Norca 514.
E.	As-Built Drawings: Irrigation Contractor shall submit as-built drawing showing valves, quick coupler & main line routing		b. Approved Equal.
	with coordinate locations & depth.		5. Operating Wrenches: Furnish total of two (2) steel, tee-handle operating wrend
F.	Extra Materials: Provide the following for Owner's use in maintenance of project.	_	to operate deepest buried valve, and socket matching valve operating nut.
	<ol> <li>Extra Spray/Rotary Heads: Two each type &amp; size.</li> <li>Extra Drip Line: Furnish an extra 100 LF dripline tubing to match type installed on Project.</li> </ol>	B.	. Plastic Automatic Control Valves: The electric remote control valve shall be a not (cycles/second) solenoid actuated globe/angle. The valve pressure rating shall not
	<ol> <li>Extra Drip Enter i utilisti al extra 100 El utipine tubing to match type instance on Hoject.</li> <li>Extra Valve Keys for Manual Valves: Two.</li> </ol>		bonnet shall be constructed of high impact, weather resistant PVC with stainless st
	4. Extra Valve Box Keys: Two.		open/close control (internal bleed) for manually opening and closing the valve wit
	5. Extra Valve Marker Keys: Two		The valve's internal bleed shall prevent flooding of the valve box. The valve shall
	6. Wrenches: One for each type head core and for removing and installing each type head.		solenoid. The solenoid shall have a captured plunger with a removable retainer for
	7. Valves: Furnish two extra valves of each type and size installed on the project.		easy turning. This 24 VAC 50/60 Hz solenoid shall open with 19.6 VAC minimum
	<u>QUALITY ASSURANCE</u> : Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing		current shall not exceed 0.41 amps. Average holding current shall not exceed 0.28 stem for accurate manual regulation and/or shut off of outlet flow. The valve must
	agency acceptable to authorities having jurisdiction, and marked for intended use.		PSI, and less than 30 seconds at 20 PSI. The valve must match the demand requir
	Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than		<ol> <li>Manufacturers: PGA Series by Rain Bird Sprinkler Mfg. Corp., Approved Equ</li> </ol>
	three years of documented experience.	C.	Valve Box and Cover: Box and cover, with open bottom and openings for piping;
	1. Approved Manufacturer: Rainbird, Toro, Hunter, Netafim, and as listed in this specification.		Include size as required for valves and service.
	<ol> <li>Contractors shall submit documentation for Manufacturers not listed above</li> <li>All like products shall be from a single supplier as listed, for example, if petafim dripline is used, all dripline in project</li> </ol>		1. General Duty Valves
	3. All like products shall be from a single supplier as listed, for example, if netafim dripline is used, all dripline in project shall be netafim.		<ul><li>a. Shape: Round</li><li>b. Sidewall: PE, ABS, or FRP</li></ul>
C.	Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years of expierence.		<ul><li>c. Cover Material: PE, ABS, FRP, Green in color</li></ul>
	DELIVERY, STORAGE, AND HANDLING:		<ol> <li>2. Remote Control Valves</li> </ol>
A.	Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end		a. Shape: Rectangular
	damage and to prevent entrance of dirt, debris, and moisture.		b. Sidewall: PE, ABS or FRP
	Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.		c. Cover Material: PE, ABS or FRP, Green in color
	<u>PROJECT CONDITIONS</u> : Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless		<ol> <li>Speciality Valve Boxes</li> <li>a. Shape: Box and cover, with open bottom and openings for piping; designed</li> </ol>
	permitted under the following conditions and then only after arranging to provide temporary water service according to		size as required for valves and service
	requirements indicated:		b. Sidewall: PE, ABS or FRP
	1. Notify Owner and/or General Contractor no fewer than two days in advance of proposed interruption of water service.		c. Cover Material: PE, ABS or FRP, Green in color
-	2. Disruption of services shall be by owner's written permission only.		4. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3/4"-inch min
	If Existing irrigation system is present. Contractor shall be responsible for tapping into existing system, capping off existing system	2.06	SPECIALTY VALVES:
	system where needed and verifying condition of existing system. COORDINATION:	А.	. Quick-Couplers: Factory-fabricated, brass, two-piece assembly. Include coupler with spring-loaded or weighted, locking rubber-covered cap; hose swivel with AS
	Coordinate timing of installation, location and installation of all sleeves under sidewalks or drives. Owner shall not be		garden hose on outlet; and operating key.
	responsible for boring due to lack of coordination of this requirement.		<ol> <li>Locking-Top Option: Vandal-resistant, single-lug locking feature. Include tw</li> </ol>
	Coordinate power requirements and connection of controller as required.		<ol> <li>Manufacturers:</li> </ol>
	Coordinate existing water supply requirements.		a. 33DLRC by Rain Bird Sprinkler Mfg. Corp.
	Coordinate with landscape installation		b. 075-SLVC by The Toro Company
E.	Irrigation Contractor to attend on-site meeting at both project kick-off and prior to installation after approved shop drawings.	_	c. Approved equal.
PART	2 - PRODUCTS	2.07 A	<u>CONTROLLER</u> . Existing controller may be used if space and functions allow. Irrigation contractor
	MANUFACTURERS:	A.	location, space and scheduling requirements prior to shop drawing approval
	In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:	Л	. If required, Controller shall be provided meeting the following requirements.
	1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified. All	D.	. If required, controller shall be provided meeting the following requirements.

## facturer as listed.

installation of pipe, fitting, and joining materials.

size shall be 2 times the irrigation pipe diameter with a minimum size 2.5"

- creens; fully adjustable for flow and pressure; size as indicated; with letter or cating center of spray pattern. Provide Head to Head coverage
- stem pressure regulator system. Pop-up height shall vary with location. ninimize waste. Adjustable patterned nozzels shall be set by the contractor
- -flow irrigation zones comprised of the following components: ve with 'double knife' diaphragm (1/2-inch diameter seat), double-filtered
- ody capable of maintaining outlet pressure of 30 psi.
- luty glass-filled nylon material with 150-mesh filter screen
- aded top section containing an indicator changing from green to red to ull. Provide with factory-installed 150 mesh filter minimum.
- ved Equal
- ssure-compensating emitters with dual outlet ports, 16 mm (0.630 inch) gallons-per-hour.
- ects in materials and workmanship and 7 years for environmental stress
- ober seal capable of accepting 1/2-inch poly tubing from 16 to 18 mm outside
- designed for use with dripline tubing.
- nd ball construction, EPDM Seat Seals and O ring, rated to 150 psi at 73°F.
- sing-stem, cast brass body and bonnet (ASTM B584) gate valve; with brass
- ?) steel, tee-handle operating wrench(es) with one pointed end, stem of length natching valve operating nut.
- remote control valve shall be a normally closed 24 VAC 50/60 Hz
- The valve pressure rating shall not be less than 150 PSI. The valve body and her resistant PVC with stainless steel screws. The valve shall have manual opening and closing the valve without electrically energizing the solenoid.
- g of the valve box. The valve shall house a fully-encapsulated, one-piece nger with a removable retainer for easy servicing, and a leverage handle for
- hall open with 19.6 VAC minimum at 150 psi. At 24 VAC, average inrush ding current shall not exceed 0.28 amps. The valve shall have a flow control off of outlet flow. The valve must open or close in less than 1 minute at 150
- alve must match the demand required by the proposed zone. rinkler Mfg. Corp., Approved Equal
- bottom and openings for piping; designed for installing flush with grade.
- color
- in color
- and openings for piping; designed for installing flush with grade. Include
- in color
- stone, graded from 3/4"-inch minimum to 1 inch maximum.
- piece assembly. Include coupler water-seal valve; removable upper body covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for
- le-lug locking feature. Include two matching keys.
- ctions allow. Irrigation contractor shall verify the existing controller for
- or to shop drawing approval
- the following requirements.

- 1. Shall include a base unit with expansions slots to accommodate zones required for working system.
- 2. Shall be capable of operating two 24 VAC solenoid valves per zone plus a mater valve. 3. Shall operate on 120VAC +/- 10% at 60Hz
- 4. Shall be capable of providing watering cycles by day of week, odd, even and cyclic.
- 5. Shall have a display capable of displaying each zones schedule start days and watering windows in the same screen with active watering schedule notification
- 6. Shall have 12-hour AM/PM or 24 hour clock with a midnight day change over
- 7. Shall have 365 day calendar backed up against power interruptions by an internal lithium battery that will maintain date and time for 10 years. Shall provide notification of lost power.
- 8. Shall be capable of communicating with the existing on-site weather sensor that measure site temperature and rainfall. 9. Controller shall have programmable rain shut off threshold
- 10. Shall be capable in running off time based program or ET based programming
- 11. The controller shall be EPA WaterSense labeled
- 12. Shall offer manual watering of all zones
- 13. Controller shall be capable of being located in the same location as the existing location.
- 14. Manufacturer's
- a. Rainbird b. Approved Equal

### 2.08 CONTROL WIRE (REMOTE VALVE TO CONTROLLER)

- A. General: UL 493, Type UF, single conductor, with solid-copper conductor and PE insulation; suitable for direct burial 1. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, between controllers and automatic control valves; color
  - coded per the following
  - a. Common Wire White
  - b. Control Wire Red
  - c. Spare Common Wire Green
  - d. Spare Control Wire Blue
- 2. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring-type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial
- 3. Each wire path shall be grounded using a Rain Bird MSP-1 surge protector, or approved equal
- 4. All connectors shall be 3M DBR connectors only
- 2.09 RAIN/TEMPERTURE SENSOR
- A. Automatic rain shutoff sensor shall be capable of sensing precipitation/temperature and interrupting irrigation during rain and low temperature events.
- B. All sensors shall be capable of interfacing with approved controller.
- C. Contractor shall field locate for optimum performance. Location shall be approved prior to installation.
- 2.10 MISCELLANEOUS SPRINKLER EQUIPMENT: A. Valve Identification Tags: Pre-printed plastic tags with minimum text height of 1 inch, capable of being attached to valve
- stem or valve wire within valve box.
- B. Gravel: Clean washed gravel <sup>3</sup>/<sub>4</sub>" nominal diameter. 2.11 POINT OF CONNECTION
- A. Irrigation Contractor shall be responsible for providing all point of connection taps, back flow devices, values, values & covers.
- B. Irrigation Contractor shall show in the provided shop drawings the point of connection for approval. C. Irrigation Contractor shall provide a Master Valve for the proposed irrigation system.
- PART 3 EXECUTION
- 3.01 GENERAL:
- A. Install piping and wiring in sleeves under sidewalks, roadways, and parking lots.
- 1. Install piping sleeves by boring or jacking under existing paving if possible. No open cutting of pavement shall be allowed
- 2. Irrigation Contractor shall coordinate sleeve locations under new construction during early construction stages to avoid boring where possible; Refer to Sheet LS200 for sleeve locations.
- B. Provide minimum cover over top of underground piping according to the following:
- 1. Irrigation Main Piping: Minimum depth of 18 inches below finished grade to top of pipe.
- 2. Circuit (Lateral) Piping: Minimum depth of 12 inches below finished grade to top of pipe.
- 3. Sleeves: 18 inches Minimum.
- 3.02 PREPARATION:
- A. Set stakes to identify locations proposed irrigation system. Obtain owners approval before excavation. Locate all utilities prior to excavation.
- B. Route piping to avoid conflicts with other work
- C. Unless otherwise installed, bore for sleeves under existing pavement as indicated on plans. Employ equipment and methods designed for horizontal boring.
- 1. Sleeves shall be installed prior to pavement installation. All additional costs for boring sleeves shown in the plan shall be the responsibility of the contractor.
- 3.03 TRENCHING
- A. Trench and backfill with subsoil excavated on-site. Fill material shall be free of lumps larger than 3-inches, rocks larger than 2-inches and debris. Topsoil shall be placed as noted on the plans.
- B. Trench shall accommodate grade changes
- C. Maintain trenches free of debris, material or obstructions that may damage pipe.
- 3.04 PIPING APPLICATIONS:
- A. Install components having pressure rating equal to or greater than system operating pressure.
- 3.05 PIPING INSTALLATION: A. Location and Arrangement: To be determined by shop drawing approval. Drawings shall indicate irrigation type to be
- installed.

3.06 JOINT CONSTRUCTION:

3.07 VALVE INSTALLATION:

3.08 OUTLET INSTALLATION:

heads.

- B. Install piping free of sags and bends.
- C. Install groups of pipes parallel to each other spaced to permit valve servicing.
- D. Install fittings for changes in direction and branch connections.
- E. Install dielectric fittings to connect piping of dissimilar metals.
- F. Install underground thermoplastic piping according to ASTM D2774.
- G. Lay piping on solid subbase, uniformly sloped without humps or depressions.

A. Underground Gate Valves: Install in round valve box with top flush with grade.

B. Control Valves/Master Valves: Install in rectangular control-valve box.

shop drawings. Flush all lines prior to installation of drip lines.

C. Quick Couple Valves: Install in round valve box.

3.09 AUTOMATIC-CONTROL SYSTEM INSTALLATION:

- H. Install PVC piping in dry weather when temperature is above 40°F (5°C). Allow joints to cure at least 24 hours at temperatures above 40°F (5°C) before testing unless otherwise recommended by manufacturer.
- A. Construct solvent-weld joints per ASTM D2855 and Butt Heat Fusion (HDPE Piping) per ASTM D3261 & ASTM D2657 B. Construct mechanical joints per manufacturer's recommendations:

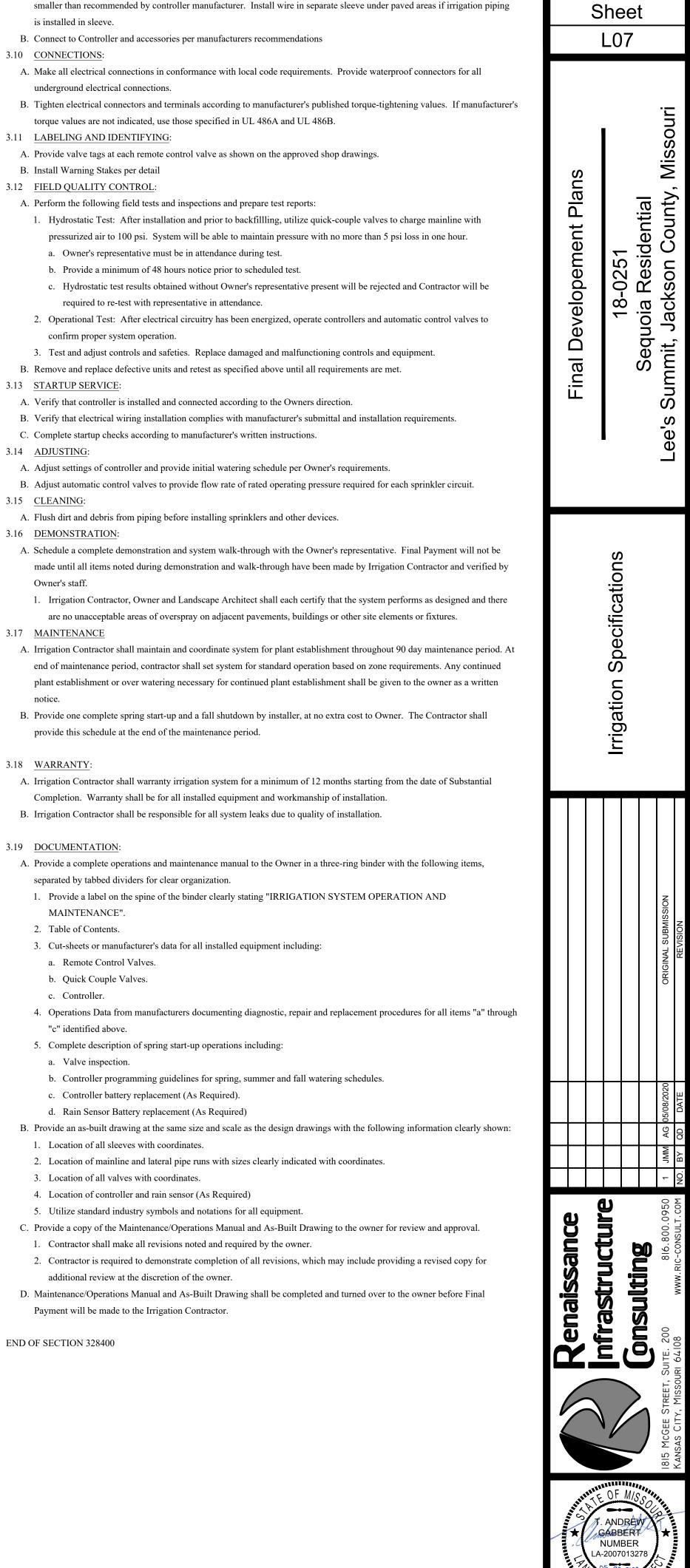
A. Drip line Installation: Install drip lines per manufacturer's recommendations in areas shown on the plans and the approved

B. Rotary/Spray Head Installation: Install rotary/spray heads per manufacturer's recommendations in areas shown on the plans

A. Install control wire in same trench as irrigation piping as approved with shop drawings. Provide conductors of size not

and approved shop drawings. Heads shall be installed flush with finish grade. Flush all lines prior to installation of irrigation

1. Provide adequate joint restraint at all mechanical joints through thrust blocking or mechanical restraints.



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