THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT

LOTS 9-19 & TRACTS A-D

STREET AND STORM CONSTRUCTION PLANS

Section 8, Township 48 North, Range 31 West

LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

INDEX OF SHEETS:

CONSTRUCTION AND DESIGN NOTES:

STREET & STORM SEWERS:

1 ~ STREET PAVEMENT SHALL CONSIST OF TYPE CG-2 CURBS WITH PAVEMENT PER TABLE LS-2 OF THE LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL

RESIDENTIAL LOCAL STREET SEE BELOW FOR TYPICAL SECTION.
OPTION 1) 4" TYPE II ASPHALT BASE AND 2" TYPE III ASPHALT SURFACE OVER A 6" MoDOT TYPE 5 BASE AND A SUBGRADE MIXTURE OF 6" FLY ASH STABILIZED SUBGRADE IN ACCORDANCE WITH THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.
OPTION 2) 4" TYPE II ASPHALT BASE AND 2" TYPE III ASPHALT SURFACE OVER 6" MoDOT TYPE 5 BASE OVERTOP A BIAXIAL GEOGRID MEETING THE REQUIREMENTS OF TABLE 2201.6-1

2 ~ STORM SEWER PIPE SHALL BE HIGH DENSITY POLYETHYLENE (HDPE) AS APPROVED BY CITY OF LEES SUMMIT DESIGN AND CONSTRUCTION MANUAL.

3 ~ JUNCTION BOXES SHALL BE PER CITY OF LEES SUMMIT STANDARD DRAWING NO. JB-1. FIELD INLETS SHALL BE PER CITY OF LEES SUMMIT STANDARD DRAWING FI-1. TOEWALLS SHALL BE PER CITY OF LEES SUMMIT DRAWING NO. SD-35. STORM MANHOLES SHALL BE PER CITY OF LEES SUMMIT DETAIL SD-27. ROCK LINING AND RIP RAP SHALL BE PER CITY OF LEES SUMMIT.

GENERAL NOTES:

1 ~ ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.
2 ~ ALL REQUIRED EASEMENTS WITHIN THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED FOR ON THE FINAL PLAT.
3 ~ ANY REQUIRED EASEMENT LOCATED OUTSIDE OF THE BOUNDARY OF THIS PROJECT SHALL BE PROVIDED FOR BY SEPARATE INSTRUMENT PRIOR TO ISSUANCE OF CONSTRUCTION PERMITS.
4 ~ THE CONTRACTOR SHALL NOTIFY THE CITY OF LEE'S SUMMIT DEVELOPMENT ENGINEERING INSPECTION AT 816.969.1200 AT LEAST 48 HOURS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION.
5 ~ THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH THE IMPROVEMENTS PROPOSED BY THESE PLANS AND SITE CONDITIONS.
6 ~ THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND OBTAIN THE APPROPRIATE BLASTING PERMITS FOR A REQUIRED BLASTING. IF BLASTING IS ALLOWED, ALL BLASTING SHALL CONFORM TO STATE REGULATIONS AND LOCAL ORDINANCES.

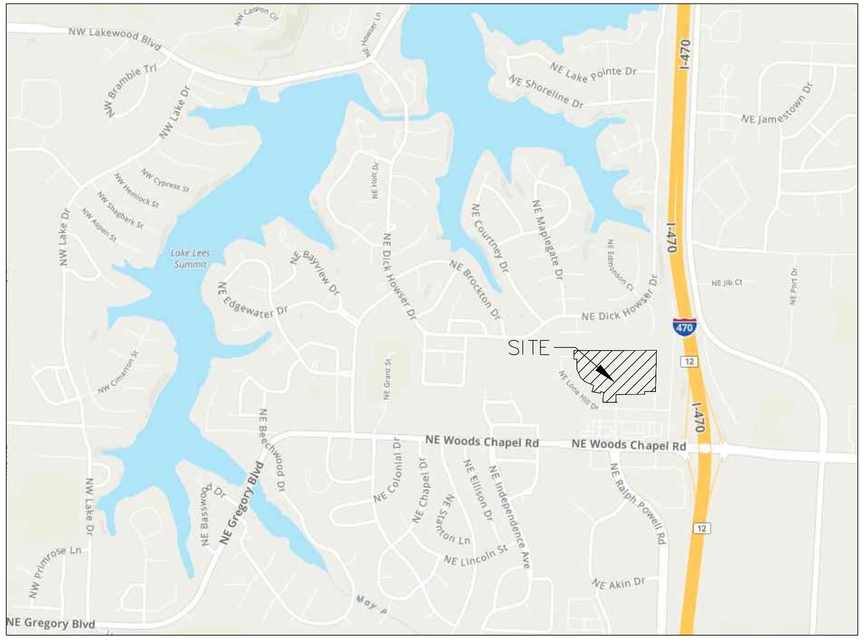
UTILITY COMPANIES:

THE FOLLOWING LIST OF UTILITY COMPANIES IS PROVIDED FOR INFORMATION ONLY. WE DO NOT OFFER ANY GUARANTEE OR WARRANTY THAT THIS LIST IS COMPLETE OR ACCURATE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES THAT MAY BE AFFECTED BY THE PROPOSED CONSTRUCTION AND VERIFYING THE ACTUAL LOCATION OF EACH UTILITY LINE. THE CONTRACTOR SHALL NOTIFY ENGINEERING SOLUTIONS AT 816.623.9888 OF ANY CONFLICT WITH PROPOSED IMPROVEMENTS.

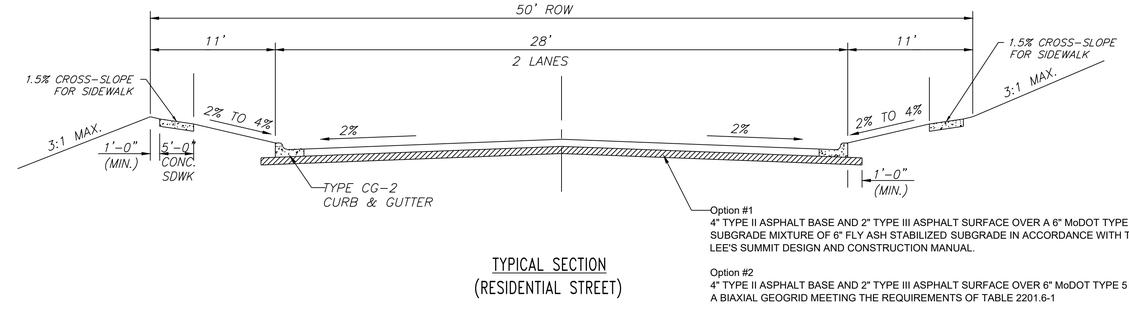
EVERGY ~ 298-1196
MISSOURI GAS ENERGY ~ 756-5261
SOUTHWESTERN BELL TELEPHONE ~ 761-5011
COMCAST CABLE ~ 795-1100
WILLIAMS PIPELINE ~ 422-6300
CITY OF LEE'S SUMMIT PUBLIC WORKS ~ 969-1800
CITY OF LEE'S SUMMIT PUBLIC WORKS INSPECTIONS ~ 969-1800
CITY OF LEE'S SUMMIT WATER UTILITIES ~ 969-1900
MISSOURI ONE CALL (DIG RITE) ~ 1-800-344-7483

OIL - GAS WELLS
ACCORDING TO EDWARD ALTON MAY JR'S ENVIRONMENTAL IMPACT STUDY OF ABANDONED OIL AND GAS WELLS IN LEE'S SUMMIT, MISSOURI IN 1995, THERE ARE NOT OIL AND GAS WELLS WITHIN 185 FEET OF THE PROPERTY AS SURVEYED HEREON.

FLOOD INFORMATION:
The property is located in Zone "X" areas outside the 100 year flood plain per FEMA Map 29095C0430G, dated January 20, 2017



SITE LOCATION MAP



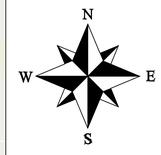
TYPICAL SECTION
(RESIDENTIAL STREET)

Option #1
4" TYPE II ASPHALT BASE AND 2" TYPE III ASPHALT SURFACE OVER A 6" MoDOT TYPE 5 BASE AND A SUBGRADE MIXTURE OF 6" FLY ASH STABILIZED SUBGRADE IN ACCORDANCE WITH THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL.

Option #2
4" TYPE II ASPHALT BASE AND 2" TYPE III ASPHALT SURFACE OVER 6" MoDOT TYPE 5 BASE OVERTOP A BIAXIAL GEOGRID MEETING THE REQUIREMENTS OF TABLE 2201.6-1

Summary of Quantities:

ITEM AND DESCRIPTION	UNIT	ESTIMATED QUANTITY
ASPHALT PAVING	S.Y.	3,430.98
CURBING	FT	2,343.62
5' SIDEWALK	S.F.	12,057.55
MoDOT Type 5 Base	S.Y.	3,702.68
GEOGRID	S.Y.	3,702.68
ADA SIDEWALK RAMP	UNIT	7
CLEARING, GRADING & GRUBBING	LS	1
SILT FENCE	FT	5,724.09
INLET PROTECTION	UNIT	44.00
SEEDING / MULCHING/ FERTILIZING	AC	18.83
CONST. ENTRANCE	UNIT	2.00
RIP RAP W/ FABRIC	S.Y.	35.00
DITCH CHECK	UNIT	3.00
STORM		
30" HDPE	FT	76.46
24" HDPE	FT	54.41
18" HDPE	FT	299.20
15" HDPE	FT	1,129.96
4' x 4' JUNCTION BOX	EA	2.00
18" HDPE END SECTION / TOE WALL	LS	2.00
30" HDPE END SECTION / TOE WALL	LS	2.00
DETENTION OUTLET CONTROL STRUCTURE	EA	1.00
4' x 4' STORM FIELD INLET	EA	6.00
5' x 4' STORM CURB INLET	EA	6.00



LEGEND:
B/L – BUILDING SET-BACK
C/A – COMMON AREA
D/E – DRAINAGE EASEMENT
FND. – FOUND
L/E – LANDSCAPE EASEMENT
L.N.A. – LIMITS OF NO ACCESS
R/W – RIGHT OF WAY
SAN – SANITARY SEWER LINE
S/W – SIDEWALK
U/E – UTILITY EASEMENT
W – WATER LINE
ST – STORM SEWER LINE

ENGINEER'S CERTIFICATION:

I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN DESIGNED AND THESE PLANS PREPARED IN ACCORDANCE WITH THE CURRENT DESIGN CRITERIA OF THE CITY OF LEE'S SUMMIT, MISSOURI AND THE STATE OF MISSOURI. I FURTHER CERTIFY THAT THESE PLANS WERE DESIGNED IN ACCORDANCE TO AASHTO STANDARDS.

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

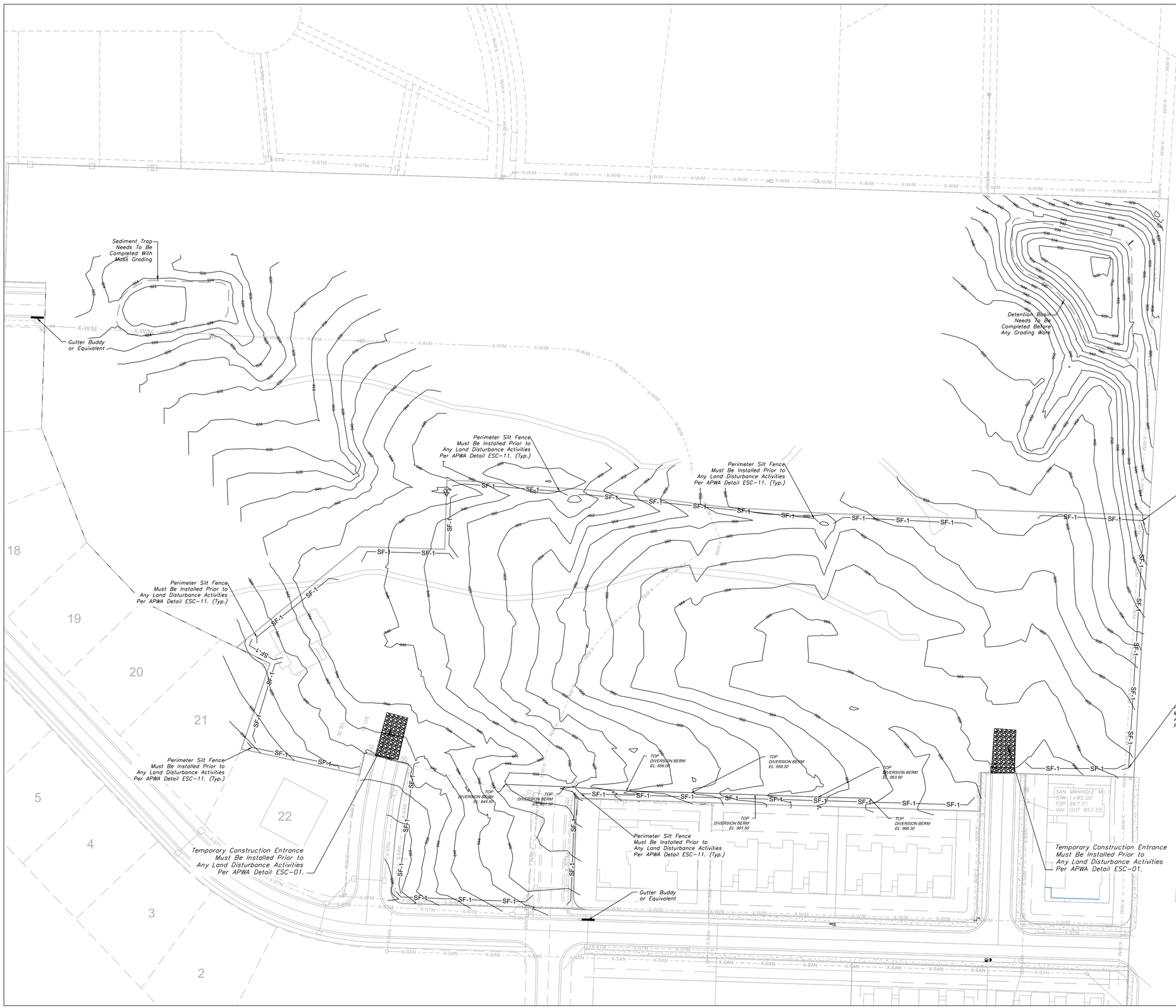
Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Street & Storm Cover Sheet
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.001



North

0 50' 100' 200'

PRE CLEARING PLAN

SCALE: 1" = 100'

NOTES: The Land Disturbance Plans indicates the Final placement of erosion control devices. The contractor(s) may proceed with construction prior to the final placement of these devices by providing additional devices to control erosion on their items of work. These devices shall be maintained until the final devices are in place.

SF-1 SILT FENCE PROTECTION TO BE MAINTAINED BY CONTRACTOR

LEGEND

PHASE 1 SILT FENCE ——SF-1——SF-1——

PHASE 2 SILT FENCE ——SF-2——SF-2——

INLET PROTECTION

DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

ESC PHASE 1 - Pre Clearing Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2006019708
PROFESSIONAL ENGINEER

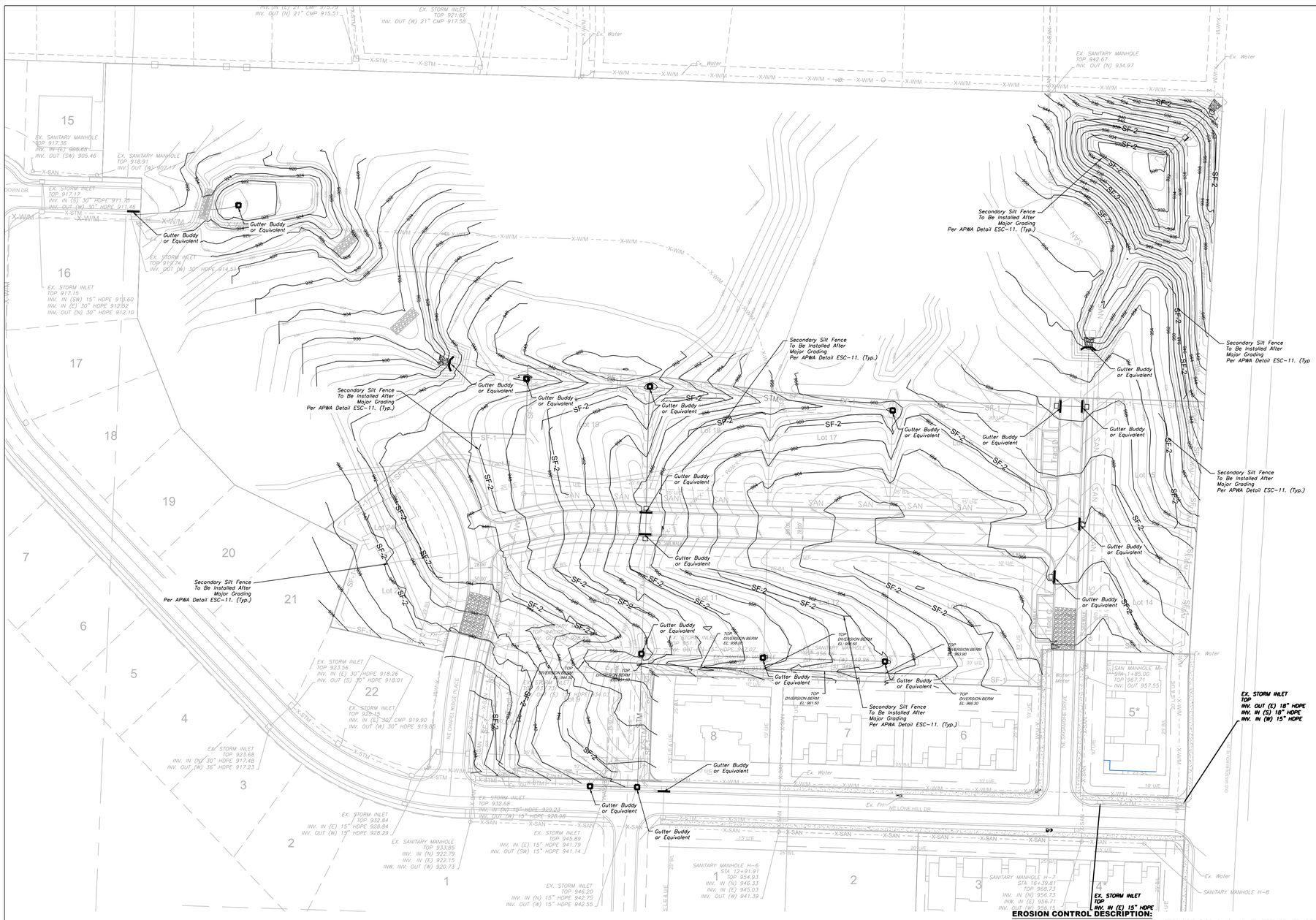
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

6/25/2021 As-Built

8/18/2021 As-Built

C.050



0 30' 60' 120'

INACTIVE AREA STABELIZATION PLAN

SCALE: 1" = 60'

NOTES: The Land Disturbance Plans indicates the Final placement of erosion control devices. The contractor(s) may proceed with construction prior to the final placement of these devices by providing additional devices to control erosion on their items of work. These devices shall be maintained until the final devices are in place.

SF-1 — SILT FENCE PROTECTION TO BE MAINTAINED BY CONTRACTOR

LEGEND

PHASE 1 SILT FENCE — SF-1 — SF-1

PHASE 2 SILT FENCE — SF-2 — SF-2

INLET PROTECTION GUTTER BUDDY OR EQUIVALENT

DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

MAINTENANCE:

TO MAINTAIN THE EROSION AND SEDIMENT CONTROLS, THE FOLLOWING PROCEDURES WILL BE PERFORMED:

SEDIMENT CAPTURE DEVICES: SEDIMENT WILL BE REMOVED FROM THE UPSTREAM OR UPSLOPE SIDE OF THE FILTER FABRIC FENCES, WHEN THE DEPTH OF ACCUMULATED SEDIMENT REACHES ABOUT ONE-THIRD THE HEIGHT OF THE STRUCTURE.

STORM SEWER INLETS: ANY SEDIMENT IN THE STORM SEWER INLETS WILL BE REMOVED AND DISPOSED OF PROPERLY.

TEMPORARY CONTROLS: ALL TEMPORARY CONTROLS WILL BE REMOVED AFTER THE DISTURBED AREAS HAVE BEEN STABILIZED.

INSPECTION PROCEDURES:

INSPECTIONS WILL BE DONE BY THE RESPONSIBLE PERSON(S) AT LEAST ONCE EVERY WEEK AND WITHIN 24 HOURS EACH STORM EVENT PRODUCING ANY AMOUNT OF RAINFALL. AREAS THAT HAVE BEEN RESEEDED WILL BE INSPECTED REGULARLY AFTER SEED GERMINATION TO ENSURE COMPLETE COVERAGE OF EXPOSED AREAS. DISTURBED AREAS THAT HAVE NOT BEEN FINALLY STABILIZED SHALL HAVE ALL POLLUTION CONTROL MEASURES INSPECTED FOR PROPER INSTALLATION, OPERATION AND MAINTENANCE. LOCATIONS WHERE STORM WATER LEAVES THE SITE SHALL BE INSPECTED FOR EVIDENCE OF EROSION OR SEDIMENT DEPOSITION. ANY DEFICIENCIES SHALL BE NOTED IN A REPORT OF THE INSPECTION AND CORRECTED WITHIN SEVEN CALENDAR DAYS OF THE INSPECTION. THE PERMITTEE SHALL PROMPTLY NOTIFY THE SITE CONTRACTORS RESPONSIBLE FOR OPERATION AND MAINTENANCE OF POLLUTION CONTROL DEVICES OF DEFICIENCIES.

IF THE EXISTING GROUND COVER IS NATURAL GRASS, DISTURBED AREAS SHALL BE TEMPORARILY SEEDED WITH WHEAT/RYE AT A RATE OF 1.5 POUNDS PER 1000 SQUARE FEET. PERMANENT SEEDING SHALL CONSIST OF 90% IN THREE EQUAL PARTS OF THIN BLADE, TURF-TYPE, TALL FESCUE AND 10% BLUEGRASS SEED AT A RATE OF 10 POUNDS PER 1000 SQUARE FEET. BOTH TEMPORARY AND PERMANENT SEEDED AREAS SHALL BE MULCHED AND WATERED TO MAINTAIN THE PROPER MOISTURE LEVEL OF THE SOIL TO ESTABLISH GRASS. NEW GRASS SHALL BE WATERED AND MAINTAINED UNTIL IT REACHES A HEIGHT OF 3 INCHES. ANY BARE AREAS SHALL BE RESEEDED.

ALL EROSION CONTROL DEVICES SHALL BE REMOVED BY GENERAL CONTRACTOR AFTER SITE STABILIZATION IS COMPLETE AND APPROVED BY ENGINEER.

THE DEVELOPER WILL DESIGNATE A QUALIFIED PERSON OR PERSONS TO PERFORM THE FOLLOWING INSPECTIONS:

STABILIZATION MEASURES: DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION WILL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM. AFTER A PORTION OF THE SITE IS FINALLY STABILIZED, INSPECTIONS WILL BE CONDUCTED AT LEAST ONCE EVERY MONTH THROUGHOUT THE LIFE OF THE PROJECT. CONTRACTOR CAN CONTACT ENGINEERING SOLUTIONS FOR COPIES OF THE INSPECTION FORM TO BE USED FOR STABILIZATION MEASURES.

STRUCTURAL CONTROLS: FILTER FABRIC FENCES AND ALL OTHER EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN WILL BE INSPECTED REGULARLY FOR PROPER POSITIONING, ANCHORING, AND EFFECTIVENESS IN TRAPPING SEDIMENTS. SEDIMENT WILL BE REMOVED FROM THE UPSTREAM OR UPSLOPE SIDE OF THE FILTER FABRIC. CONTRACTOR CAN CONTACT ENGINEERING SOLUTIONS FOR COPIES OF THE INSPECTION FORM TO BE USED FOR STABILIZATION MEASURES.

DISCHARGE POINTS: DISCHARGE POINTS OR LOCATIONS WILL BE INSPECTED TO DETERMINE WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT AMOUNTS OF POLLUTANTS FROM ENTERING RECEIVING WATERS.

CONSTRUCTION ENTRANCE: LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE WILL BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING.

A LOG OF EACH INSPECTION SHALL BE KEPT. THE INSPECTION REPORT IS TO INCLUDE THE FOLLOWING MINIMUM INFORMATION: INSPECTORS NAME, DATE OF INSPECTION, OBSERVATIONS RELATIVE TO THE EFFECTIVENESS OF THE POLLUTION CONTROL DEVICES, ACTIONS TAKEN OR NECESSARY TO CORRECT DEFICIENCIES, AND LISTING OF AREAS WHERE LAND DISTURBANCE OPERATIONS HAVE PERMANENTLY OR TEMPORARILY STOPPED. THE INSPECTION REPORT SHALL BE SIGNED BY THE PERMITTEE OR BY THE PERSON PERFORMING THE INSPECTION IF DULY AUTHORIZED TO DO SO.

EROSION CONTROL DESCRIPTION:

1.) SILT FENCE SHALL BE PLACE AT THE PERIMETER OF THE GRADING AND AT INTERMEDIATE AREAS THROUGHOUT THE SITE AS SHOWN ON THE PLAN. INLET SEDIMENT TRAPS SHALL BE PLACED SURROUNDING ALL STORM INLETS

2.) INSTALL TEMPORARY CONSTRUCTION ENTRANCE AS SHOWN ON PLAN

EROSION CONTROL PROCEDURE:

1.) SILT FENCE AND TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT THE PERIMETER OF THE GRADED AREAS PRIOR TO BEGINNING OF CLEARING OR DEMOLITION OPERATIONS. THE CONTRACTOR SHALL INSTALL SILT FENCE AS SHOWN ON PLANS AS GRADING PROGRESSES.

TEMPORARY CONSTRUCTION ENTRANCE NOTES:

A.) INSTALLATION

1.) AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC STREETS. IF POSSIBLE, LOCATE WHERE PERMANENT ROADS WILL EVENTUALLY BE CONSTRUCTED

2.) REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE AND CROWN FOR POSITIVE DRAINAGE.

3.) IF SLOPE TOWARDS THE PUBIC ROAD EXCEED 2% CONSTRUCT A 6 TO 8 INCH HIGH RIDGE WITH 3H : 1V SIDE SLOPES ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE EDGE OF THE PUBLIC ROAD TO DIVERT RUNOFF AWAY FROM IT.

4.) INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES ALONG PUBLIC ROADS

5.) PLACE STONE TO DIMENSIONS AND GRADES AS SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPED FOR DRAINAGE

6.) DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE

7.) IF WET CONDITIONS ARE ANTICIPATED PLACE GEOTEXTILE FABRIC ON THE GRADED FOUNDATION TO IMPROVE STABILITY

B.) TROUBLESHOOTING

1.) CONSULT WITH A QUALIFIED DESIGN PROFESSIONAL IF ANY OF THE FOLLOWING OCCUR:

-INADEQUATE RUNOFF CONTROLS TO THE EXTENT THAT SEDIMENT WASHES ONTO PUBLIC ROADS

- INSTALL DIVERSIONS OR OTHER RUNOFF CONTROL MEASURES

-SMALL STONE, THIN PAD, OR ABSENCE OF GEOTEXTILE FABRIC RESULTS IN RUTS AND MUDDY CONDITIONS AS STONE IS PRESSED INTO SOIL - INCREASE STONE SIZE OR PAD THICKNESS OR ADD GEOTEXTILE FABRIC

-PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC - EXTEND PAD BEYOND THE MINIMUM 50 FOOT LENGTH AS NECESSARY

C.) INSPECTION AND MAINTENANCE

1.) INSPECT STONE PAD AND SEDIMENT DISPOSAL AREA WEEKLY AND AFTER ANY RAIN EVENT

2.) RESHAPE PAD AS NEEDED FOR PROPER DRAINAGE AND RUNOFF CONTROL

3.) TOP DRESS WITH CLEAN 2 AND 3 INCH STONE AS NEEDED

4.) IMMEDIATELY REMOVE MUD OR SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADWAY. REPAIR ANY BROKEN ROAD PAVEMENT IMMEDIATELY

5.) REMOVE ALL TEMPORARY ROAD MATERIALS FROM AREAS WHERE PERMANENT VEGETATION WILL BE ESTABLISHED

"AS-BUILT"

900.10

~~910.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

ESC PHASE 2 - Inactive Area Stabilization Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO

Issue Date: April 10, 2020

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER 2006019708
PROFESSIONAL ENGINEER

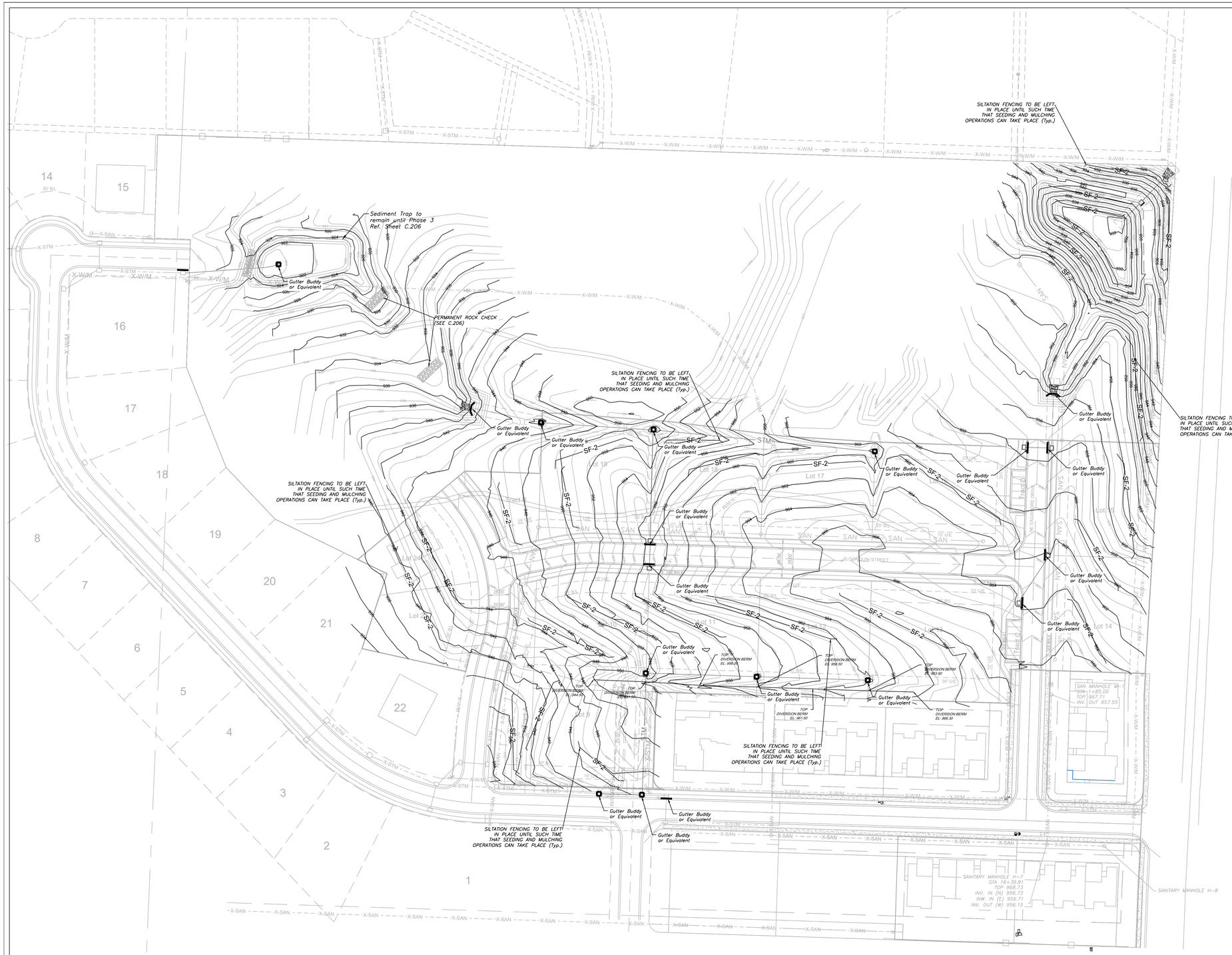
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

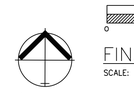
REVISIONS

6/25/2021 As-Built

8/18/2021 As-Built

C.051





FINAL RESTORATION PLAN

SCALE: 1" = 100'

SF-1 SILT FENCE PROTECTION TO BE MAINTAINED BY CONTRACTOR

LEGEND

PHASE 1 SILT FENCE ——SF-1——SF-1——

PHASE 2 SILT FENCE ——SF-2——SF-2——

INLET PROTECTION GUTTER BUDDY OR EQUIVALENT

DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

NOTES: The Land Disturbance Plans indicates the Final placement of erosion control devices. The contractor(s) may proceed with construction prior to the final placement of these devices by providing additional devices to control erosion on their items of work. These devices shall be maintained until the final devices are in place.

SEED AND MULCH NOTES:

All areas disturbed by construction activities shall be seeded and mulched. Seeding shall be done before the proposed seedbed becomes eroded, crusted over, or dried out and shall not be done when the ground is frozen, or covered with snow. The seed shall comply with the requirements of the Missouri Seed Law and the Federal Seed Act. Also, it shall contain no seed of any plant on the Federal Noxious Weed List. Other weed seeds shall not exceed one percent by weight of mix

Seed and Fertilizer Rate:

Mix I - Rye Grass / Blue Grass -------- 100 lbs. per Acre
Mix II - Tall Fescue / Blue Grass ------ 195 lbs. per Acre
Lime ----------2000 lbs per Acre (50 lbs. per 1000 sq. ft.)
Fertilizer ----------800 to 1200 lbs per Acre (25 lbs per 1000 sq. ft.)

During the dates December 15th through May 31 ALL lime fertilizer, seed and mulch shall be applied to finished slopes of disturbed areas. During the months of June, July, October and November 1st through December 15th, lime fertilizer, seed and mulch shall be applied at the following rates:
Lime - 100% of specified quantity
Fertilizer - 75% of the specified quantity
Seed - 50% of the specified quantity
Mulch - 100% of the specified quantity

Mulch shall be Vegetative type, cereal straw from stalks of oats, rye, or barley, or approved equal. The straw shall be free of prohibited weed seed and relatively free of all other noxious and undesirable seed. Mulch shall be applied at the rate of 2 tons per acre, (70 to 90 lbs per 1000 sq. ft.). Mulch shall be embedded by a mulch anchoring tool or disk type roller having flat serrated disks spaced not more than 10 inches apart and cleaning scrapers shall be provided

ONCE SITE IS 90% VEGETATED ALL ESC DEVICES SHALL BE REMOVED AND ANY DISTURBED AREAS SHALL BE RESTORED

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

ESC PHASE 3 - Final Restoration Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

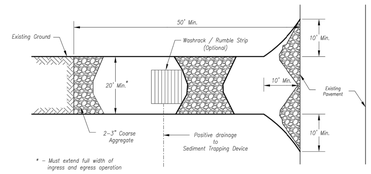
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

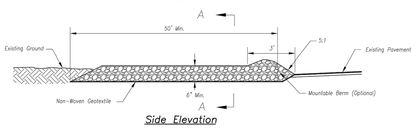
6/25/2021 As-Built

8/18/2021 As-Built

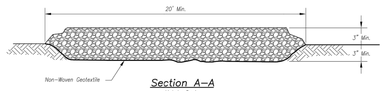
C.052



Plan View
Not to Scale



Side Elevation
Not to Scale



Section A-A
Not to Scale

Notes for Construction Entrance:

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

Maintenance for Construction Entrance:

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

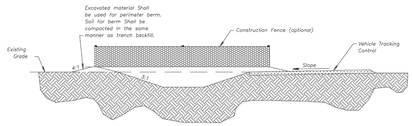
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

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

Maintenance for Concrete Washout:

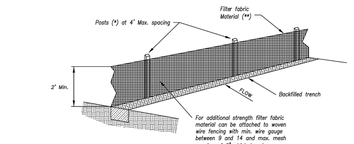
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
3. Concrete washout water, wasted pieces of concrete and all other debris in the subsurface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

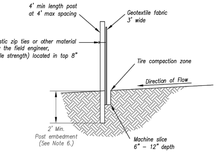


CONCRETE WASHOUT

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

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





(*) POSTS
- MIN. LENGTH 4'
- HARDWOOD 1 ⅜" x 1 ⅜"
- NO.2 SOUTHERN PINE 2 ⅜" x 2 ⅜"
- STEEL 1.33 LB/FT

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

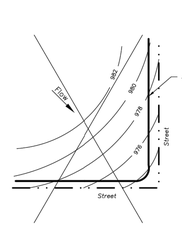
Notes:

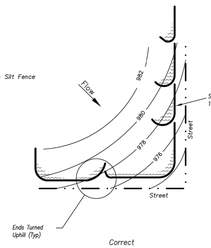
1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate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

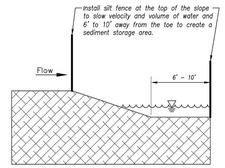
Maintenance:

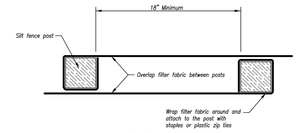
1. Remove and dispose of sediment deposits when the deposit approaches ½ the height of silt fence.
2. Repair as necessary to maintain function and structure.

SILT FENCE DETAILS
Not to Scale









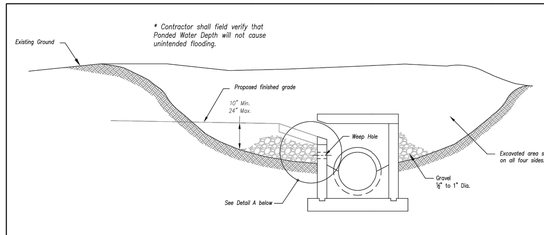
JOINING FENCE SECTIONS
Not to Scale

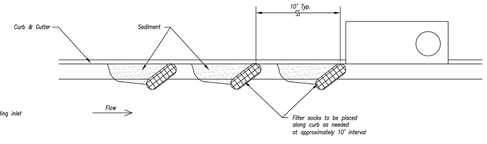
Figure A

SILT FENCE LAYOUT
Not to Scale

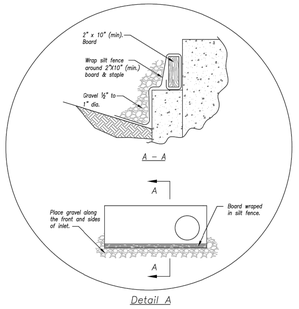
Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

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



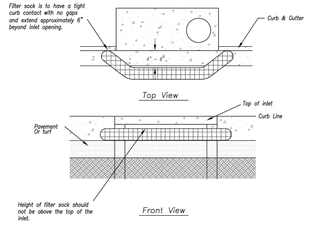


On Grade Curb Inlet Protection



Detail A

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



Sump Inlet Sediment Filter

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

Notes:

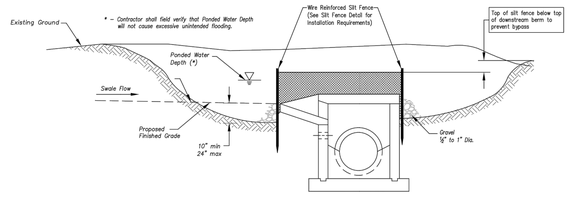
1. Immediately following inlet construction and prior to construction of curb and inlet throat, protect inlet opening by installing 2" x 10" (min.) board wrapped in silt fence. Structures shall have excavated storage area on all four sides to allow settling of sediment (Early Stage Curb Inlet).
2. When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

Maintenance:

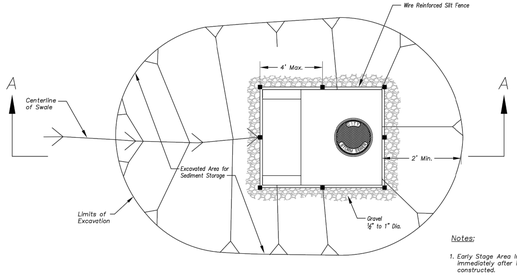
1. Remove deposited sediment from excavated storage areas when available storage has been reduced by 20%.
2. Remove deposited sediment from filter socks or similar when any accumulation of sediment is visible.
3. Repair or replace as necessary to maintain function and integrity of installation.

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

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

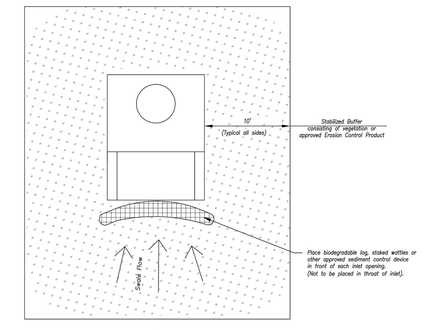


Section A–A
Not to Scale

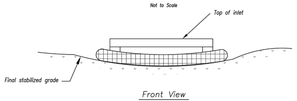


Plan
Not to Scale

EARLY STAGE AREA INLET
(All open boxes and inlets not at final grade)



Plan
Not to Scale



Front View

LATE STAGE AREA INLET
(Area inlets at final grade and existing inlets)

Notes:

1. Early Stage Area Inlet Sediment Barrier to be installed immediately after inlet or junction box is constructed.
2. Silt fence shall remain in place until excavated area is removed and Late Stage Area Inlet is being installed.
3. Backfill excavated area ONLY after final grading of the site. Stabilization of the site is to immediately follow.
4. Wire reinforced silt fence may be used in place of silt fence attached to wood frame.

Maintenance:

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

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

AMERICAN PUBLIC WORKS ASSOCIATION	
Kansas City Metro Chapter APWA AMERICAN PUBLIC WORKS ASSOCIATION	KANSAS CITY METRO CHAPTER
AREA INLET AND JUNCTION BOX PROTECTION	STANDARD DRAWING NUMBER ESC-07
	ADOPTED: 10/24/2016

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005005319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

ESC - Standard Details
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER
PE-2006019708
NOTARIAL SEAL

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.053

North

0 25' 50' 100'

SITE PLAN

SCALE: 1" = 50'

0+00 Water Line 4 Connect to Existing Water Line Convert Temp. Hydrant into Permanent Hydrant

Sediment Trap to remain until Phase 3 Ref. Sheet C.206

Water Line 4

Rock Check Dam for Sediment Trap Ref. Sheet C.206

Sta. 5+07.60 Water Line 1= Sta. 1+90.48 Water Line 4 Install 8"x8" Tee 2-8" Gate Valves(S&E) 1-Thrust Block

Existing Water Line to be removed and properly disposed of offsite

Water Line 1

Rock Check Dam for Sediment Trap Ref. Sheet C.206

Non-Grouted Rip Rap Apron 1-1 Ref. Sheet C.304

Flared End Section w/ Toe Wall FES 1-1

Sta. 2+84.19 Water Line 1 Install Fire Hydrant Assy

Sidewalk Will Be Constructed With the Infrastructure Along Tract B

Existing Water Line to be removed and properly disposed of offsite

Existing Sanitary Manhole

Sanitary Line B

Sanitary Manhole B-1

Detention Basin Ref. Sheet C.208

Sanitary Line B

Sanitary Manhole B-2

Flared End Section w/ Toe Wall FES 4-1

Non-Grouted Rip Rap Apron 1-1 Ref. Sheet C.304

Sanitary Manhole B-3

Contractor is Responsible to Remove All Existing Onsite Fence and Structures and properly dispose of these items offsite

Sta. 2+91.43 Water Line 3 End Construction

Sta. 2+89.43 Water Line 3 Install Fire Hydrant Assy

4'x4' Field Inlet 1-2 Located in Sump Openings All Sides

4'x4' Field Inlet 1-3 Located in Sump Openings All Sides

4'x4' Field Inlet 1-4 Located in Sump Openings All Sides

5'x4' Curb Inlet 5-1

5'x4' Curb Inlet 4-2

Lot 19

Lot 18

Lot 17

Lot 16

Lot 15

Lot 14

Tract B

Tract A

Tract C

Tract D

Lot 24

Lot 23

Lot 10

Lot 11

Lot 12

Lot 13

Lot 9

Sanitary Manhole A-1

5'x4' Curb Inlet 2-1

Sanitary Manhole A-2

Sanitary Line A

Sanitary Manhole A-3

Water Line 3

5'x4' Curb Inlet 4-3

Sanitary Line B

5'x4' Curb Inlet 4-4

Sanitary Manhole B-4

ALGONQUIN STREET

NE SAGAMORE DRIVE

NE CHAPEL RIDGE PLACE

NE LONE HILL DR

NE SUNDOWN DR

5' SIDEWALK

Sta. 0+69.44 Water Line 1= Sta. 0+00 Water Line 2 Install 8"x8" Tee 2-8" Gate Valves(S&E) 1-Thrust Block

Sta. 0+00 Water Line 1 Connect to ex. 8" Water Line

Existing Sanitary Manhole

Existing Fire Hydrant

5'x4' Curb Inlet 2-2

Sta. 3+61.29 Water Line 2 Install Fire Hydrant Assy

Water Line 2

4'x4' Field Inlet 3-4 Located in Sump Openings N and E

4'x4' Field Inlet 3-5 Located in Sump Openings N and E

Sta. 1+01.43 Water Line 3= Sta. 6+75.29 Water Line 2 Install 8"x8" Tee 2-8" Gate Valves(S&W) 1-Thrust Block

Existing Fire Hydrant

SAN MANHOLE M-1
STA 1+85.00
TOP 962.71
INV. OUT 957.55

Existing curb, asphalt, and storm structures and lines to be demolished, removed, and properly disposed of offsite.

Existing curb, asphalt, and storm structures and lines to be demolished, removed, and properly disposed of offsite.

Existing Water Line to be removed and properly disposed of offsite

Sta. 0+00 Water Line 3 Connect to ex. 8" Water Line

Junction Box 3-1

Junction Box 3-2

30.61' 24" RCP to remain

Remove Existing Water Cross and Install 8" Tee Remove Water Line to North

The entire tract A sidewalk shall be constructed by the developer during construction of the infrastructure improvements associated with this project.

Contractor is Responsible to Remove All Existing Onsite Fence and Structures and properly dispose of these items offsite

"AS-BUILT"

900.10

~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816)623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Site Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2006019708
04/10/2020
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

6/25/2021 As-Built

8/18/2021 As-Built

C.100

All Grading Shown to be completed with this phase

START SWALE

NOTE: See Sheet C.201 for Swale Data.

North

GRAPHIC SCALE
0 20' 40' 80'

GRADING PLAN
SCALE: 1" = 40'

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

As-Built Contours

Proposed Phase 4 Contours

Lot 19
Lot 18
Lot 17
Lot 16
Lot 15
Lot 14
Lot 13
Lot 12
Lot 11
Lot 10
Lot 9
Lot 24
Lot 23

Tract A
Tract B
Tract C
Tract D

Plat Limits

19
20
21
22

TOP DIVERSION BERM EL. ~~956.00~~ 955.47

TOP DIVERSION BERM EL. ~~958.50~~ 957.31

TOP DIVERSION BERM EL. ~~963.50~~ 963.05

TOP DIVERSION BERM EL. ~~944.50~~ 949.81

TOP DIVERSION BERM EL. ~~951.50~~ 951.43

TOP DIVERSION BERM EL. ~~961.50~~ 961.35

TOP DIVERSION BERM EL. ~~966.50~~ 965.69

SAN MANHOLE M-1
STA 1+85.00
TOP 967.71
INV. OUT 957.55

ALGONQUIN STREET

NE SAGAMORE DRIVE

Estimated Cut / Fill Quantities

Site Area	7.32 Acres
Cut Volume (Unadjusted)	29,628 c.y.
Fill Volume (Unadjusted)	30,922 c.y.
Street & Sidewalk Cut Volume	1,820 c.y.
Net Excess	3,114 c.y. (Unadjusted)(Cut)

Notes

1. Contractor is responsible for verifying all existing utility locations prior to excavation
2. There are no known natural or artificial water storage detention areas, or wetlands in the area designated for construction
3. No part of the project lies within the 100 year flood plain
4. All erosion and sediment control measures need to be implemented prior to construction
5. Additional erosion control may be required by the City Engineer, Design Engineer or Owner at any time problematic areas are noted in the field or existing measures are found to be ineffective
6. Soil Stabilization of disturbed areas shall be completed within 14 days of construction inactivity
7. Contractor responsible for all density testing of roadway subgrade and granular base.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

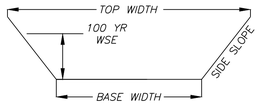
Master Drainage Plan 1 of 3:
Grading Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
2006019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.200



TYPICAL CHANNEL SECTION
SWALE DETAIL
Not To Scale

NOTE: Swale sections extend the entire length between upstream and downstream structures with the exception of a transition at each structure.

100 YEAR OVERFLOW SWALE SECTIONS

Section	100 Yr. Runoff (c.f.s.)	Bed Slope (%)	Base Width (ft)	Side Slope (1:V)	100 Yr WSE (ft)	Sectional Area	Velocity 100Yr. (f.p.s.)	Hydraulic Radius (ft)	Shear Stress (p.s.f.)
A-A	1.35	6.67	4	5	0.11	0.50	2.70	0.10	0.42
B-B	2.37	6.67	6	5	0.13	0.86	2.74	0.12	0.49
C-C	3.60	6.67	4	5	0.20	1.00	3.60	0.17	0.69
D-D	2.50	6.67	6	5	0.13	0.86	2.89	0.12	0.49
E-E	3.60	2.72	6	5	0.21	1.48	2.43	0.18	0.31
F-F	1.03	6.67	6	5	0.08	0.51	2.01	0.08	0.31
G-G	3.00	5.00	5	3	0.18	1.00	3.01	0.16	0.51
H-H	3.73	4.16	5	5	0.21	1.27	2.94	0.18	0.46
I-I	3.37	4.00	5	3	0.20	1.12	3.01	0.18	0.45

NOTE: Swale should be lined with "Straw with Net" turf reinforcment (Curlex Blanket or Eqv.) . Per Table 5607-1 in APWA Manual

Townhomes

Lot Number	Basement Type	MBOE Lt.	MBOE Rt.
9	Full	940.8	951.0
10	Daylight	951.2	940.8
11	Daylight	958.1	951.2
12	Daylight	963.9	958.1
13	Full	966.0	963.9
14	Daylight	957.4	964.9
15	Walkout	946.5	957.4
16	Walkout	960.3	960.0
17	Walkout	959.1	960.3
18	Walkout	950.2	959.1
19	Daylight	946.2	950.2

Estates

23	Walkout	935.0	939.3
24	Walkout	939.3	939.2

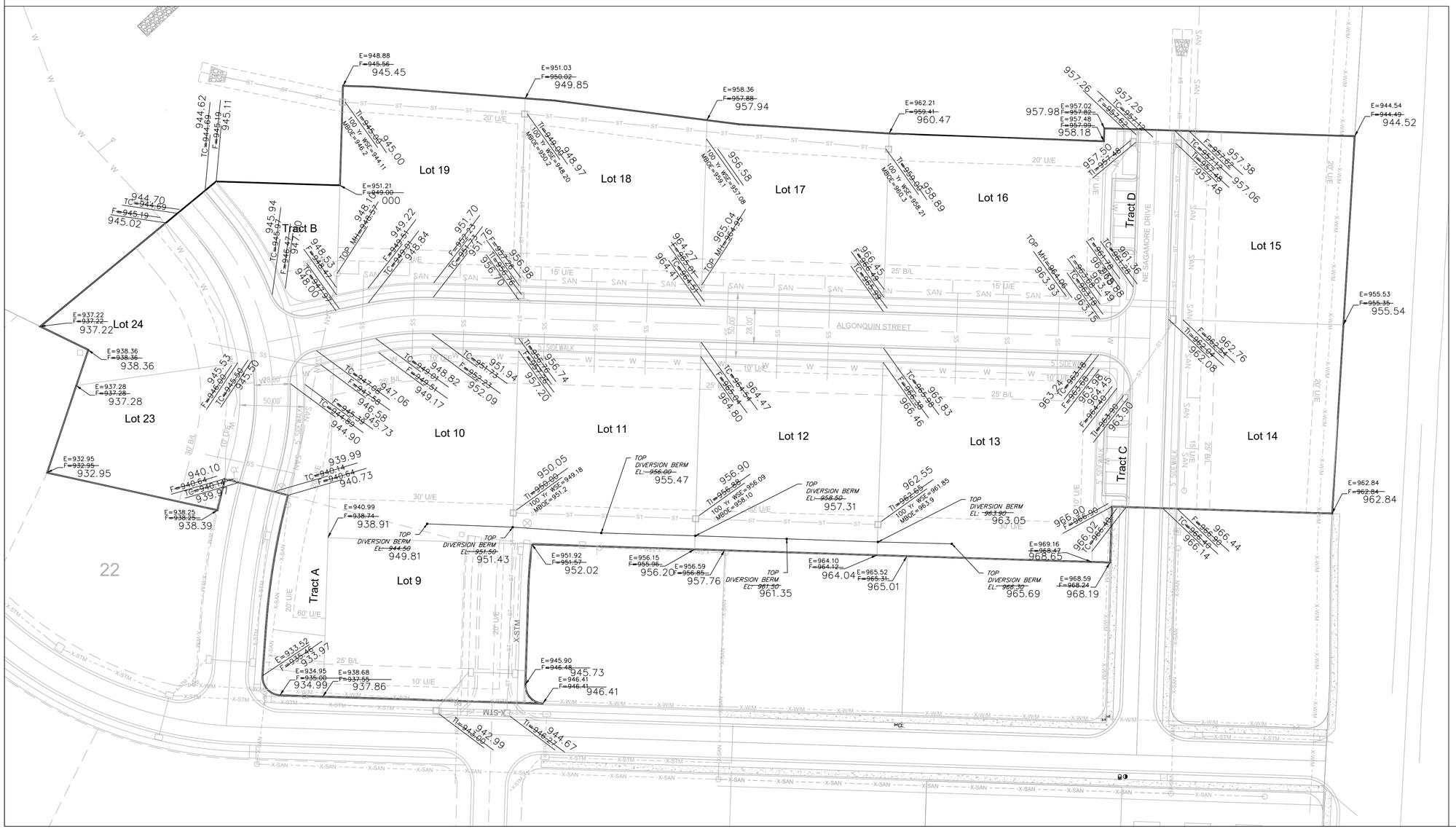
Note:

AS GRADED PLOT PLAN REQUIRED FOR EACH LOT.

North

GRAPHIC SCALE
0 20' 40' 80'

SPOT ELEVATIONS
SCALE: 1" = 40'



"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

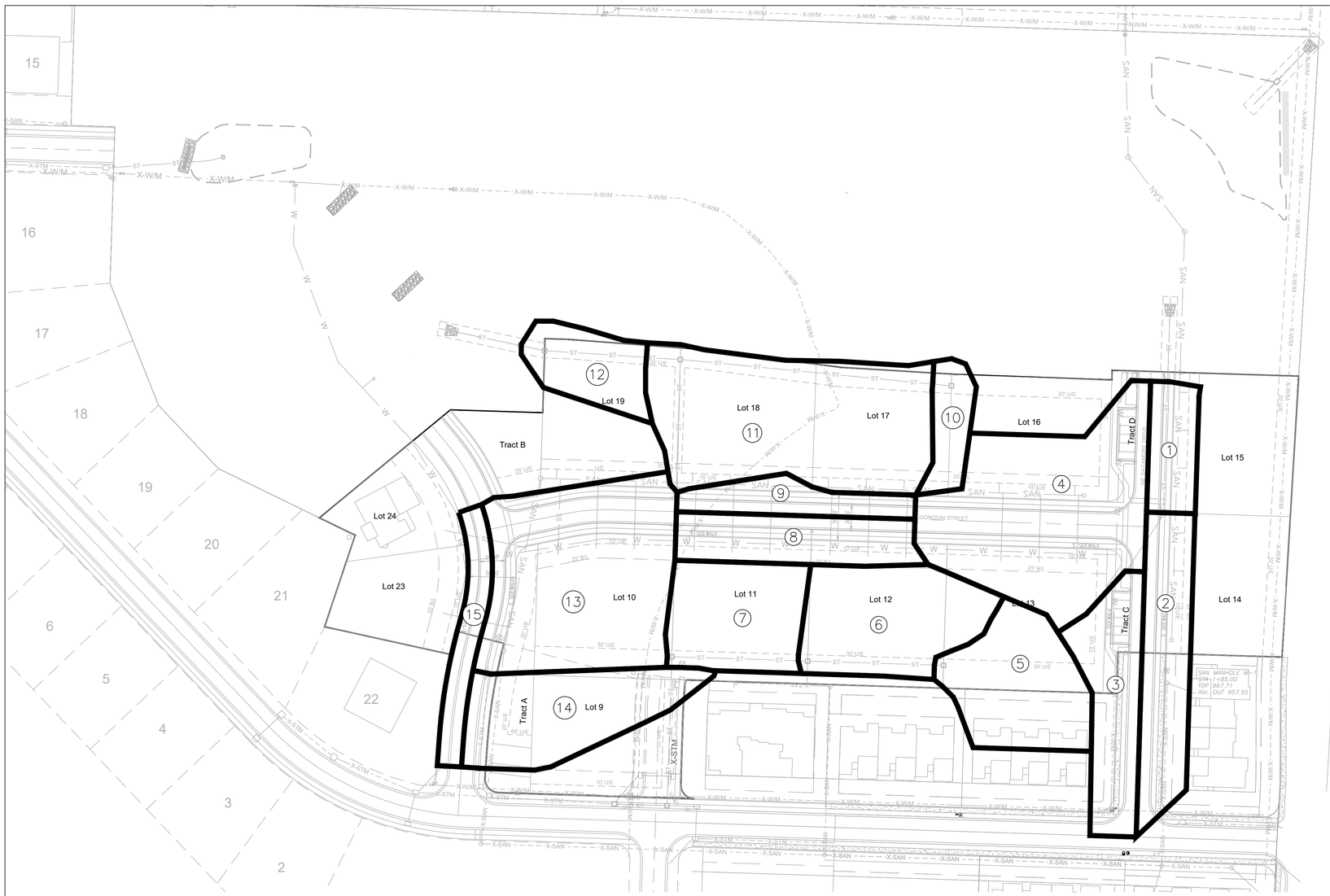
Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Master Drainage Plan 2 of 3:
Spot Elevations
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.201



GRAPHIC SCALE
0 30' 60' 120'

North

DRAINAGE AREA MAP

SCALE: 1" = 60'

APWA STORM DRAINAGE "TC" COMPUTATIONS FOR : VILLAS OF CHAPEL RIDGE 2ND PLAT

Surface types: Asph/ConcBus/Com Dirt Grass/Park Lake MultFam SnglFam Undev Other

yellow areas are self computing — SURFACE CODES: A B D G L M S U Z

overwrite if necessary — "C" Values: 0.90 0.87 0.60 0.30 0.90 0.66 0.51 0.3

TC COMPUTATION

TOTAL WATERSHED | Overwrite Length - DnElev or Slope if necessary | SURFACE CODE P=Paved U=Unpaved | Overwrite Slope or Elevations if necessary

OVERLAND FLOW - 100' MAX | FLOW - FIRST REACH

AREA ID	TOTAL SQ.FT.	TOTAL ACRES	WTRSHD LENGTH	UP ELEV	DN ELEV	SURFACE CODE	"C" VALUE	OVRLND LENGTH	UP ELEV	DN ELEV	SLOPE %	or U	CHANNEL LENGTH	UP ELEV	DN ELEV	SLOPE %	VELOCITY F/S	Cal Overland Flow T(i)	Used Min 5 Max 15 T(i)	Cal Channel One T(T)	Cal Channel Two T(T)	Total T© 10	AREA ID
POST																							POST
1	6734.45	0.15	171.71	962.75	956.48	M	0.66	36.7	962.8	962.00	2.0	P	135.0	962.0	956.5	4.09	4.1	3.8	5.0	0.5	0.0	5.5	1
2	15497.29	0.36	321.00	969.90	961.04	M	0.66	36.0	969.9	969.15	2.1	P	285.0	969.2	961.0	2.85	3.4	3.7	5.0	1.4	0.0	6.4	2
3	14565.88	0.33	115.82	968.20	962.90	M	0.66	60.5	968.2	966.00	3.6	P	55.4	966.0	962.9	5.60	4.8	4.0	5.0	0.2	0.0	5.2	3
4	38022.54	0.87	290.56	968.20	956.48	M	0.66	100.0	968.2	963.50	4.7	P	190.6	963.5	956.5	3.68	3.9	4.7	5.0	0.8	0.0	5.8	4
5	17621.66	0.40	168.61	970.50	961.65	M	0.66	100.0	970.5	967.15	3.4	U	68.6	967.2	961.7	8.02	4.6	5.3	5.3	0.3	0.0	5.5	5
6	19480.08	0.45	219.25	968.00	955.58	M	0.66	100.0	968.0	962.00	6.0	U	119.3	962.0	955.6	5.38	3.7	4.4	5.0	0.5	0.0	5.5	6
7	15534.05	0.36	183.86	964.00	949.00	M	0.66	100.0	964.0	955.00	9.0	U	83.9	955.0	949.0	7.15	4.3	3.8	5.0	0.3	0.0	5.3	7
8	12379.23	0.28	279.25	967.30	955.76	M	0.66	33.5	967.3	966.50	2.4	P	245.7	966.5	955.8	4.37	4.2	3.4	5.0	1.0	0.0	6.0	8
9	7326.23	0.17	257.20	966.50	955.76	M	0.66	11.5	966.5	966.20	2.6	P	245.7	966.2	955.8	4.25	4.2	2.0	5.0	1.0	0.0	6.0	9
10	5324.92	0.12	125.42	966.50	958.00	M	0.66	47.2	966.5	963.80	5.7	U	78.3	963.8	958.0	7.41	4.4	3.0	5.0	0.3	0.0	5.3	10
11	38079.28	0.87	354.14	966.50	948.00	M	0.66	100.0	966.5	960.50	6.0	U	254.1	960.5	948.0	4.92	3.6	4.4	5.0	1.2	0.0	6.2	11
12	9008.94	0.21	139.74	955.00	944.00	M	0.66	100.0	955.0	946.50	8.5	U	39.7	946.5	944.0	6.29	4.0	3.9	5.0	0.2	0.0	5.2	12
13	36460.35	0.84	346.50	957.50	939.00	M	0.66	36.5	957.5	956.50	2.7	P	310.0	956.5	939.0	5.65	4.8	3.4	5.0	1.1	0.0	6.1	13
14	18586.66	0.43	304.64	955.00	932.80	M	0.66	100.0	955.0	946.60	8.4	U	204.6	946.6	932.8	6.74	4.2	3.9	5.0	0.8	0.0	5.8	14
15	6741.28	0.15	280.50	946.50	932.50	M	0.66	11.5	946.5	946.20	2.6	P	269.0	946.2	932.5	5.09	4.6	2.0	5.0	1.0	0.0	6.0	15

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

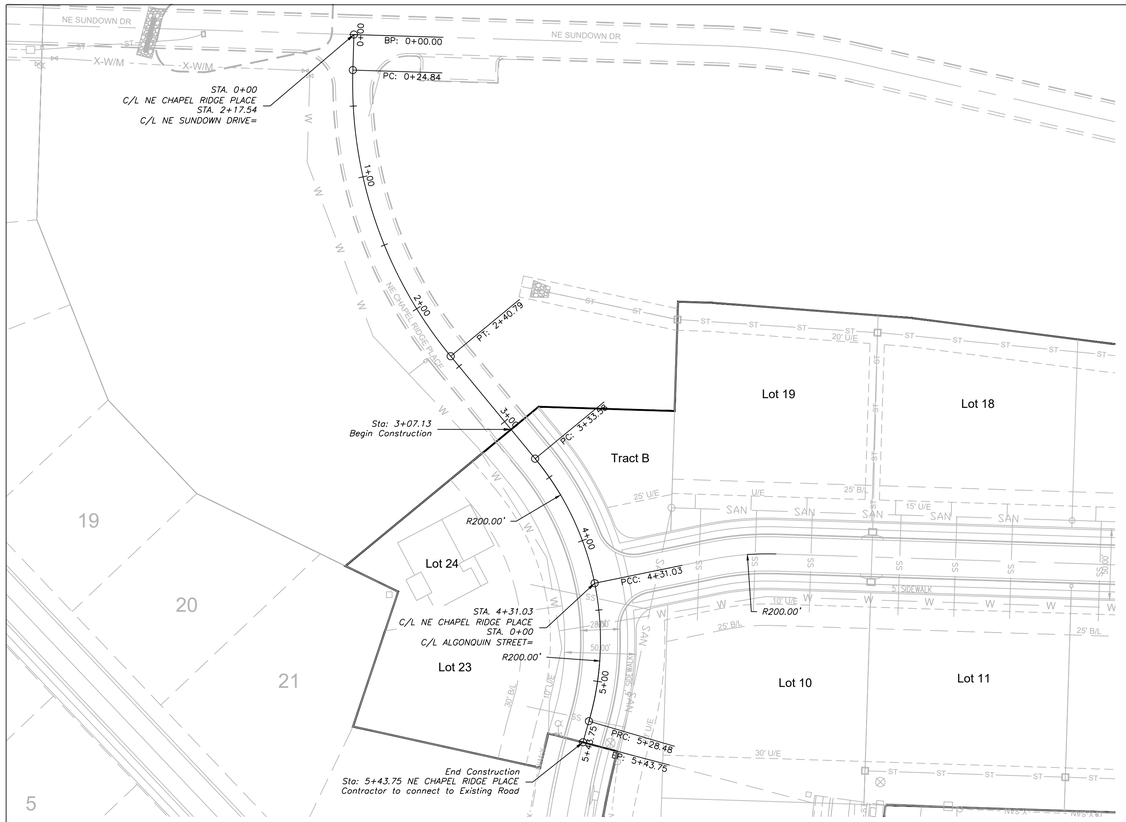
Master Drainage Map 3 of 3:
Drainage Area Map
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI — MATTHEW J. SCHLICHT — NUMBER PE-2006019708 — PROFESSIONAL ENGINEER

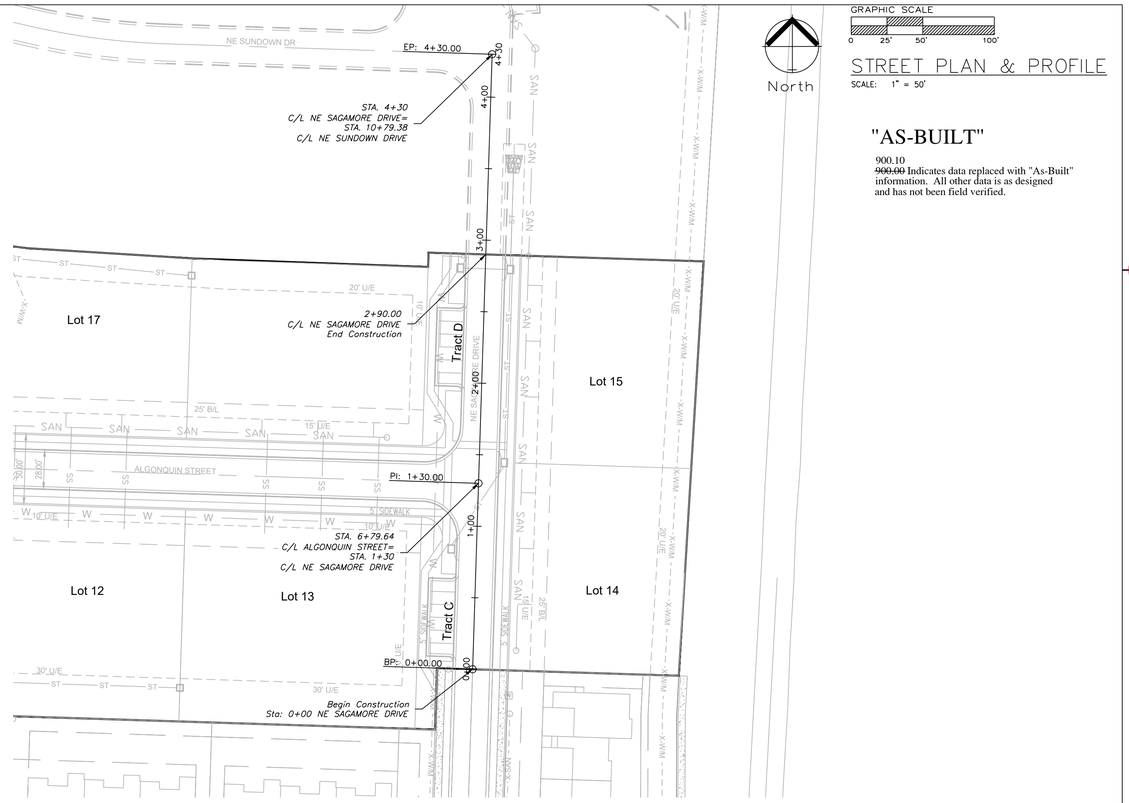
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.202



NE CHAPEL RIDGE PLACE



NE SAGAMORE DRIVE

North

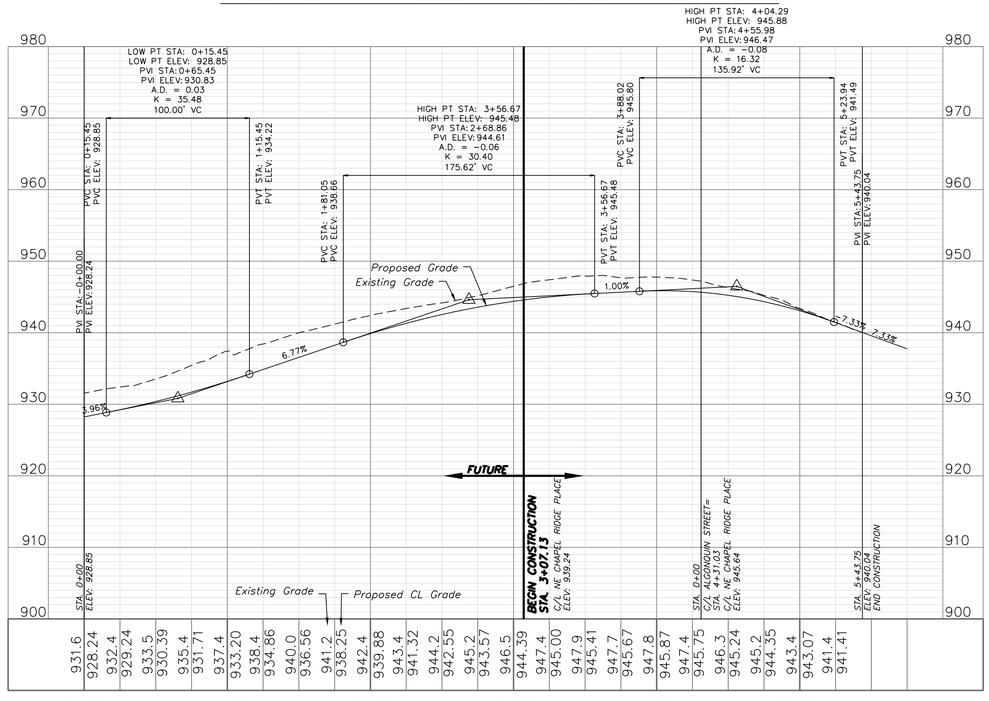
GRAPHIC SCALE
0 25' 50' 100'

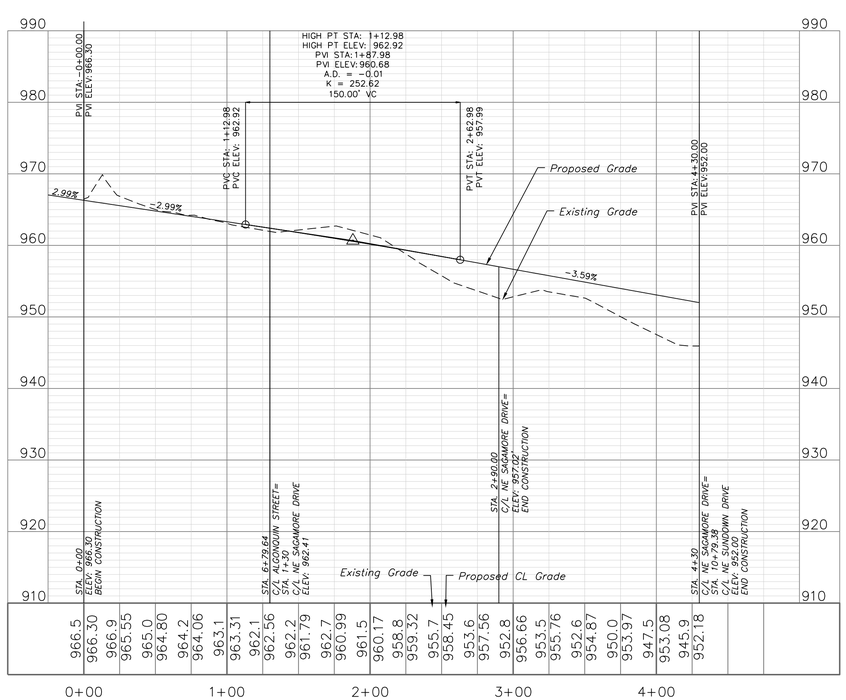
STREET PLAN & PROFILE

SCALE: 1" = 50'

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.





VERT. SCALE: 1"=10'
0 5' 10' 20'

HORIZ. SCALE: 1"=50'
0 25' 50' 100'

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Street Plan and Profile
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER 2006019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.203

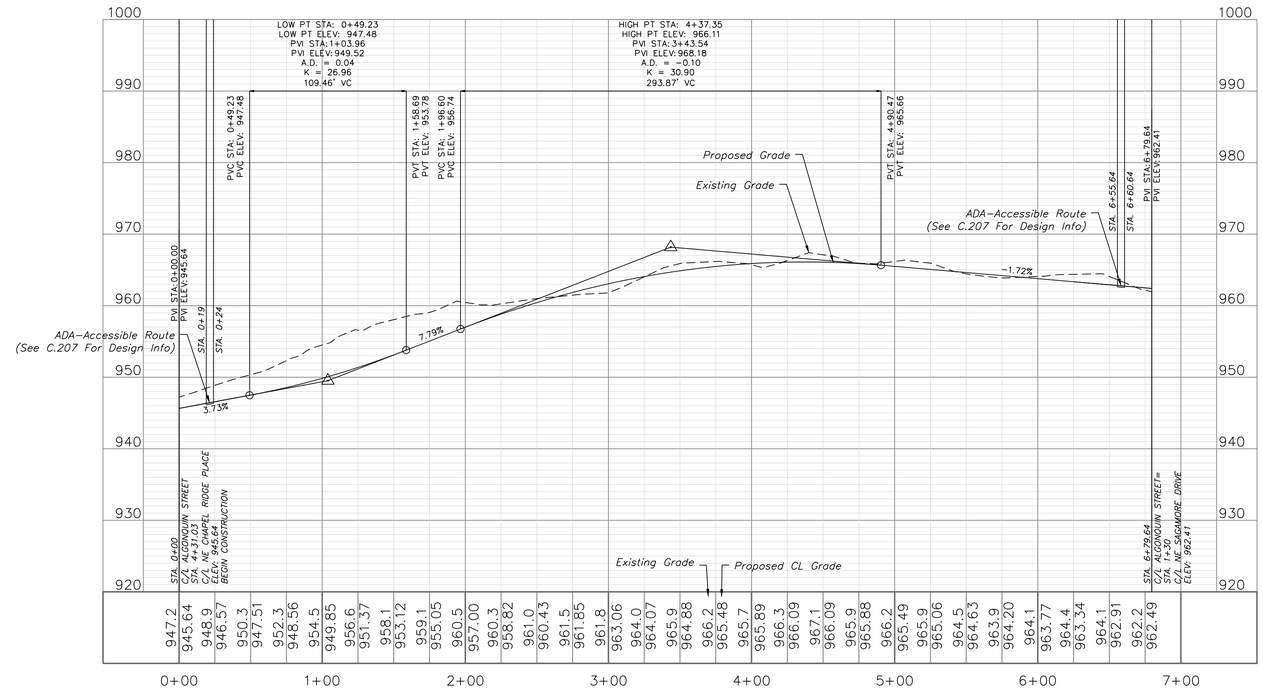
North

GRAPHIC SCALE
0 25' 50' 100'

STREET PLAN & PROFILE

SCALE: 1" = 50'

ALGONQUIN STREET



"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

VERT. SCALE: 1"=10'
0 5' 10' 20'

HORIZ. SCALE: 1"=50'
0 25' 50' 100'

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

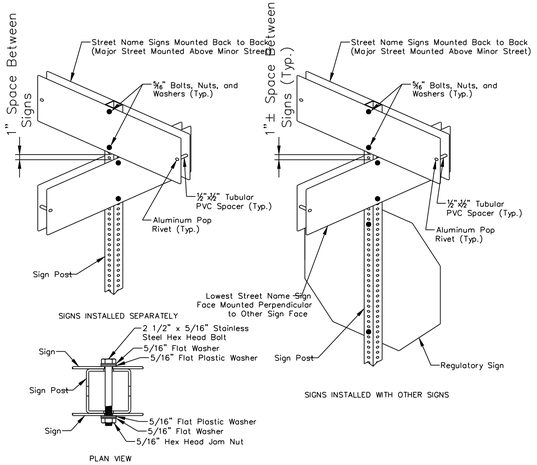
Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Street Plan and Profile
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

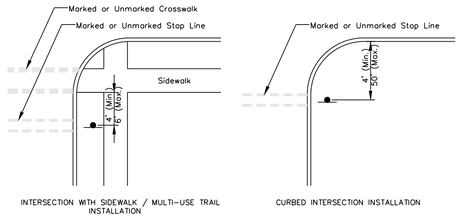
STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2006019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

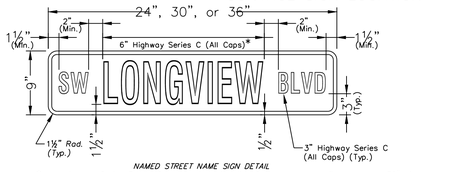
REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built



SQUARE STEEL POST MOUNTING DETAILS

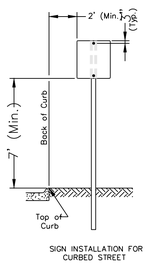


CONTROL SIGN LOCATION



NAMED STREET NAME SIGN DETAIL

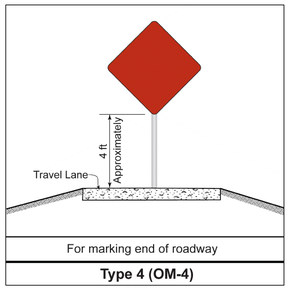
* Use Highway Series B (All Caps) in lieu of series C if necesary to fit text on a 36" sign blank.



SIGN INSTALLATION FOR CURBED STREET

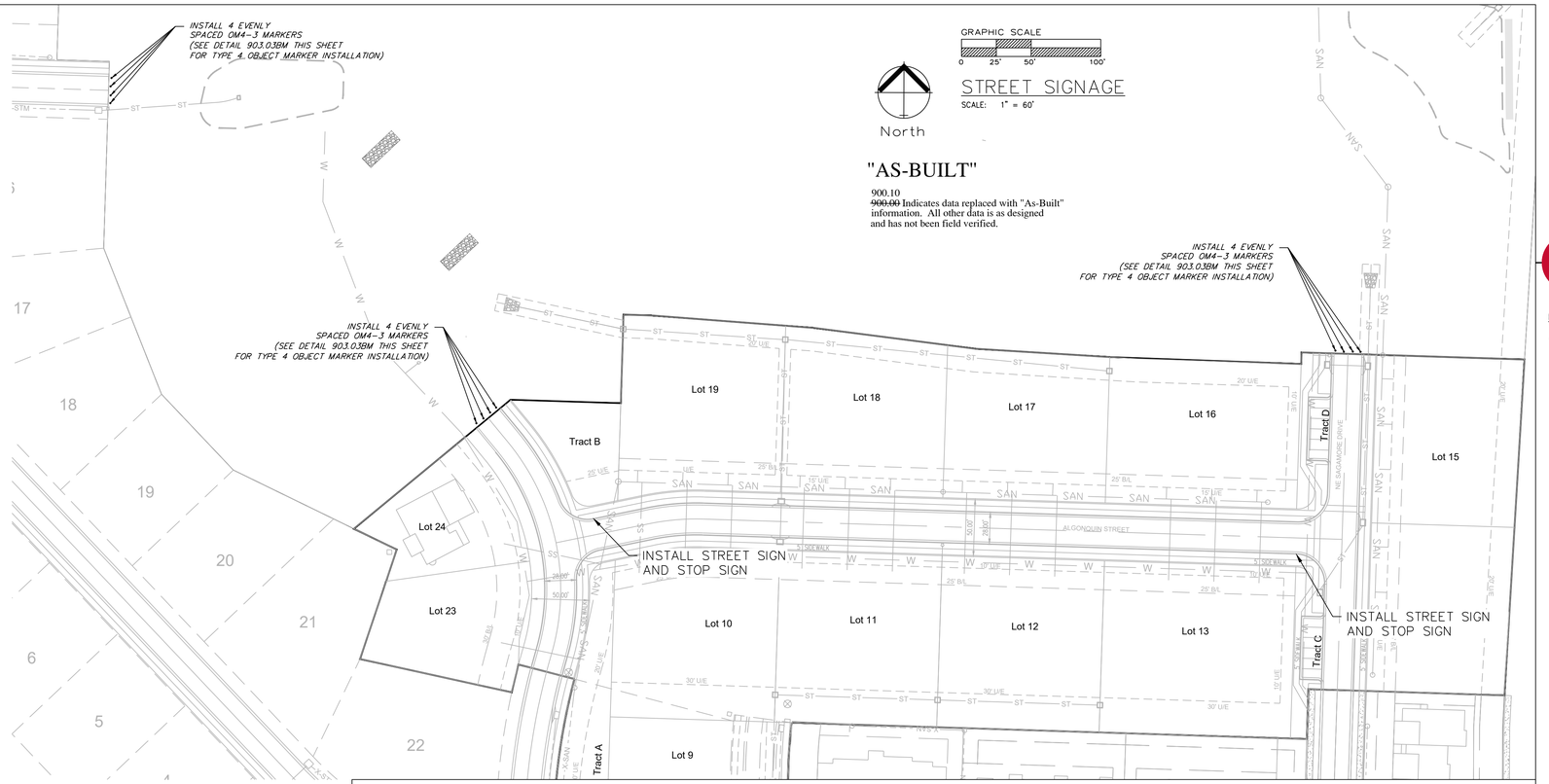
SIGN MOUNTING DETAILS

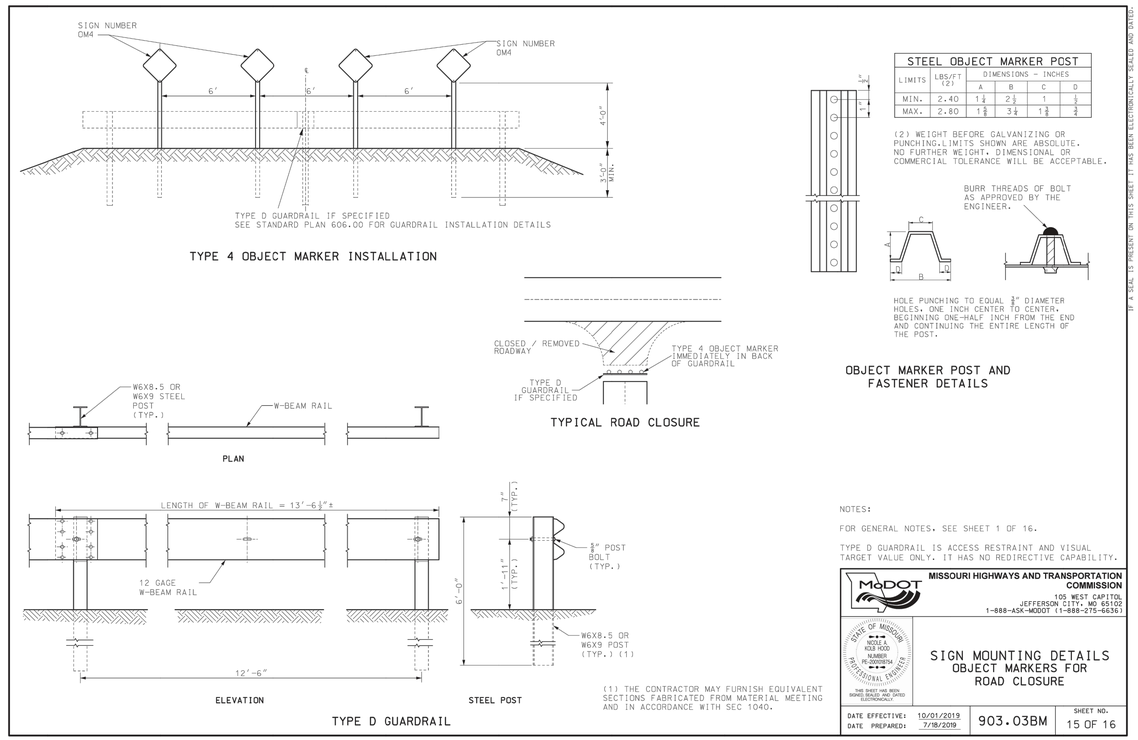
* The height to the bottom of a sign when it is located in a pedestrian walkway or extends into a walkway shall be a minimum of 80 inches above the walkway.



DETAIL

OM4-3
18" X 18"
DETAIL





ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005005319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Street Signage Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI MATTHEW J. SCHLICHT NUMBER PE-2006019708 PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

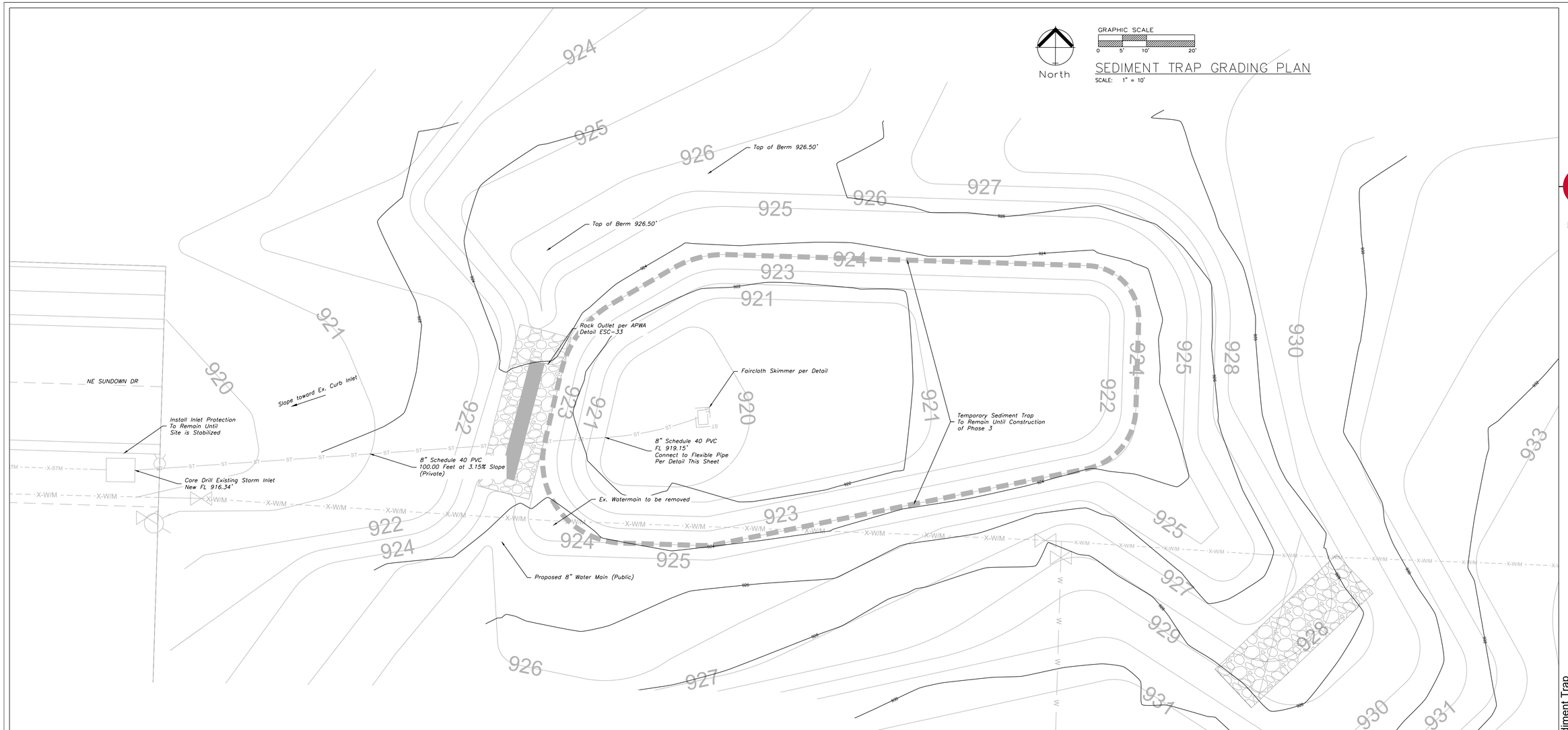
REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

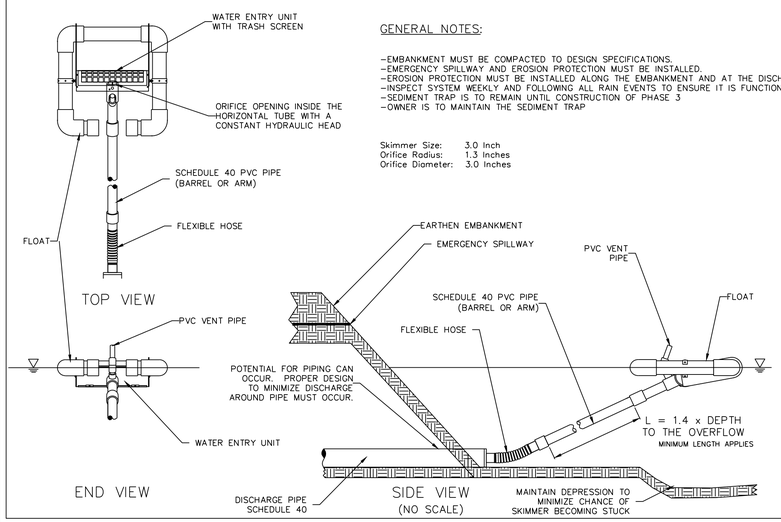
North

GRAPHIC SCALE
0 5' 10' 20'

SEDIMENT TRAP GRADING PLAN

SCALE: 1" = 10'





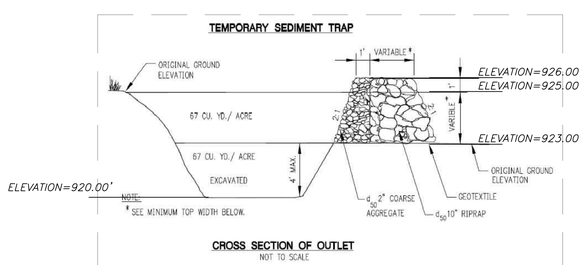
GENERAL NOTES:

-EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
-EMERGENCY SPILLWAY AND EROSION PROTECTION MUST BE INSTALLED.
-EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
-INSPECT SYSTEM WEEKLY AND FOLLOWING ALL RAIN EVENTS TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
-SEDIMENT TRAP IS TO REMAIN UNTIL CONSTRUCTION OF PHASE 3
-OWNER IS TO MAINTAIN THE SEDIMENT TRAP

Skimmer Size: 3.0 Inch
Orifice Radius: 1.3 Inches
Orifice Diameter: 3.0 Inches

SEDIMENT TRAP CALCULATIONS:

1. **TOTAL AREA DRAINAING TO BASIN = 4.08 ac**
2. **REQUIRED VOLUME OF TRAP = 67 Cu. Yd. per Acre**
   - **4.08 X 67 Cu. Yd. per Acre — 274 Cu. Yd. (Excavated)**
   - **4.08 X 67 Cu. Yd. per Acre — 274 Cu. Yd. (Storage)**
3. **VOLUME OF PROPOSED TRAP**
   - **920 to 923 Elevation — 354 Cu. Yd. (Excavated)**
   - **923 to 925 Elevation — 476 Cu. Yd. (Storage)**



"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

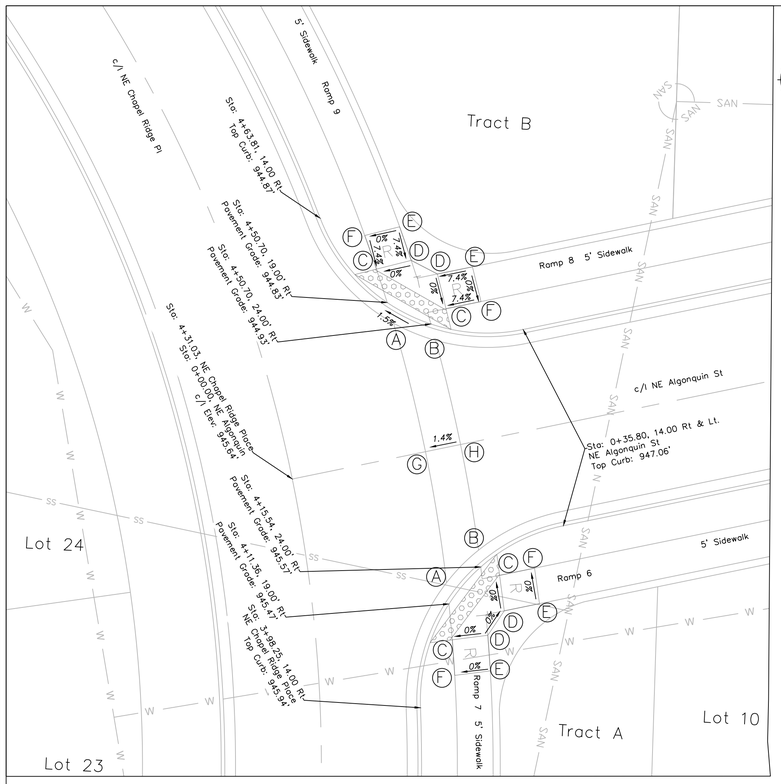
Sediment Trap
Grading Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2006019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.206



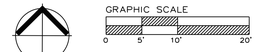
North

GRAPHIC SCALE
0 5' 10' 20'

SIDEWALK AND INTERSECTION PLAN
SCALE: 1" = 10'

SPOT ELEVATION TABLE				
	Ramp 6	Ramp 7	Ramp 8	Ramp 9
Spot	Elevation	Elevation	Elevation	Elevation
A	945.47	945.47	944.83	944.83
B	945.57	945.57	944.93	944.93
C	945.62	945.52	944.98	944.88
D	945.62	945.62	944.98	944.98
E	945.99	945.99	945.35	945.35
F	945.99	945.99	945.35	945.35
G	945.18	945.18	945.18	945.18
H	945.25	945.25	945.25	945.25

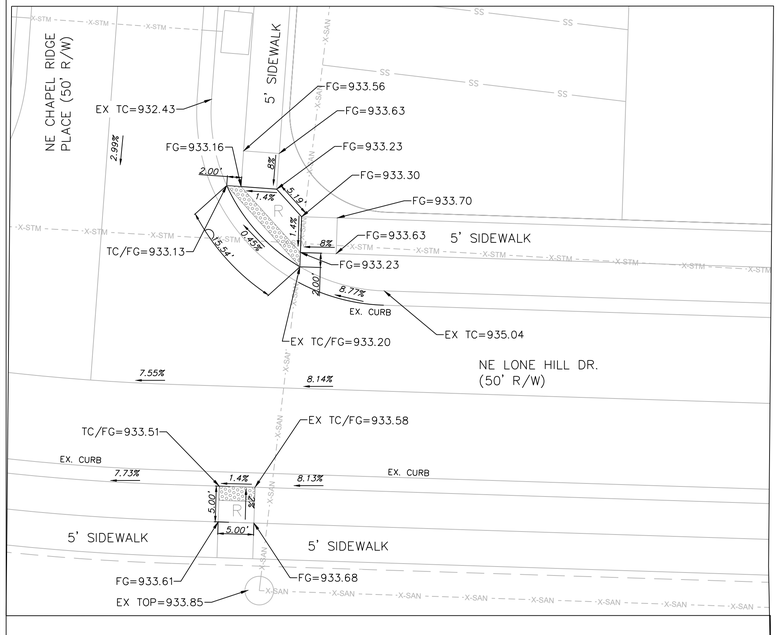
NOTE:
ALL ADA ACCESSIBLE RAMPS TO BE CONSTRUCTED WITH STREET IMPROVEMENTS.

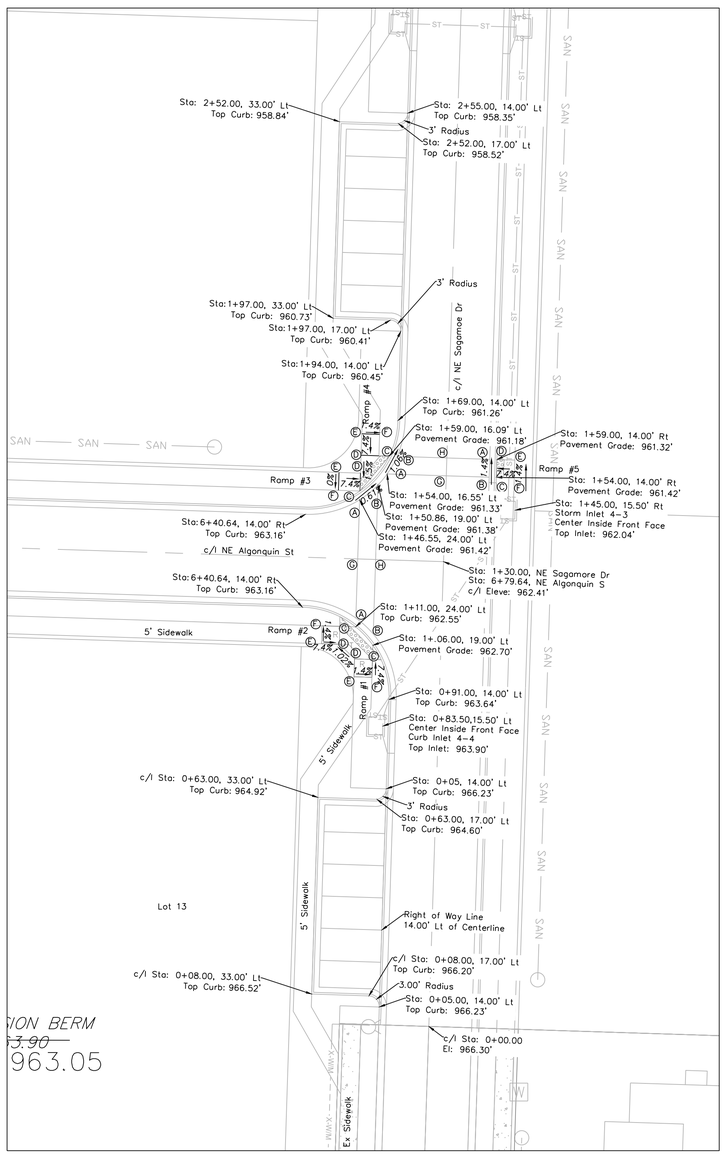


North

GRAPHIC SCALE
0 5' 10' 20'

SIDEWALK AND INTERSECTION PLAN
SCALE: 1" = 10'





North

GRAPHIC SCALE
0 10' 20' 40'

SIDEWALK AND INTERSECTION PLAN
SCALE: 1" = 20'

SPOT ELEVATION TABLE					
	Ramp 1	Ramp 2	Ramp 3	Ramp 4	Ramp 5
Spot	Elevation	Elevation	Elevation	Elevation	Elevation
A	962.55	962.55	961.42	961.33	961.35
B	962.70	962.70	961.38	961.27	961.42
C	962.75	962.69	961.45	961.30	961.45
D	962.82	962.76	961.45	961.37	961.38
E	963.19	963.13	961.90	961.81	961.75
F	963.12	963.06	961.90	961.74	961.82
G	961.99	961.99	961.99	961.38	961.38
H	961.92	961.92	961.92	961.31	961.31

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005000319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE, LSMO
Issue Date: April 10, 2020

Sidewalk and Intersection Plan
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2006019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

C.207

North

0 30' 60' 120'

STORM SEWER GENERAL LAYOUT

SCALE: 1" = 60'

Sediment Trap to Remain Until Phase 3 Ref C.206

Rock Check Dam for Sediment Trap Ref. Sheet C.206

Rock Check Dam for Sediment Trap Ref. Sheet C.206

Non-Grouted Rip Rap Apron 1-1 See Sheet C.304 for Material & Apron Dimensions See Grading Plan for Apron Geometry & Slope

Flared End Section w/ Toe Wall FES 1-1

4'x4' Field Inlet 1-2 Located In Sump Openings All Sides

4'x4' Field Inlet 1-3 Located In Sump Openings All Sides

4'x4' Field Inlet 1-4 Located In Sump Openings All Sides

NEW 5'x4' Curb Inlet 2-1

NEW 5'x4' Curb Inlet 2-2

New 4'x4' Field Inlet 3-3 Located In Sump Openings North & East

New 4'x4' Field Inlet 3-4 Located In Sump Openings North & East

New 4'x4' Field Inlet 3-5 Located In Sump Openings North & East

NEW 4'X4' Junction Box 3-1

NEW 4'X4' Junction Box 3-2

30.61' 24" RCP To Remain

Flared End Section w/ Toe Wall FES 6-1

Flared End Section w/ Toe Wall FES 6-3

Storm Line 6

Detention Outlet Control Structure 6-2 Sta: 0+42.50

Detention Basin Ref C.208

Flared End Section w/ Toe Wall FES 4-1

Non-Grouted Rip Rap Apron 4-1 See Sheet C.304 for Material & Apron Dimensions See Grading Plan for Apron Geometry & Slope

NEW 5'x4' Curb Inlet 5-1

NEW 5'x4' Curb Inlet 4-2

NEW 5'x4' Curb Inlet 4-3

NEW 5'x4' Curb Inlet 4-4

EX. STORM INLET 42C EX. TOP 937.53 EX. INV. OUT (S) 933.98 15" HDPE

EX. STORM INLET 42B EX. TOP 932.68 EX. INV. OUT (W) 929.00 15" RCP EX. INV. IN (N) 929.25 15" HDPE

EX. STORM INLET 42A EX. TOP 932.67 EX. INV. OUT (SW) 928.22 15" HDPE EX. INV. IN (E) 928.69 15" RCP

EX. STORM INLET 40F EX. TOP 928.29 EX. INV. OUT (W) 923.39 30" HDPE EX. INV. IN (NE) 923.86 15" HDPE EX. INV. IN (S) 924.12 15" HDPE EX. INV. IN (E) 924.64 24" RCP

EX. STORM INLET To Be Removed EX. TOP 942.82 EX. INV. OUT (W) 933.48 24" RCP EX. INV. IN (E) 933.92 24" RCP EX. INV. IN (NE) 938.42 15" RCP

EX. STORM INLET EX. TOP 945.65 EX. INV. OUT (W) 934.69 24" RCP EX. INV. IN (S) 934.91 24" RCP

SAN MANHOLE M-5 STA 1+85.00 TOP 967.71 INV. OUT 957.55

SANITARY MANHOLE H-7 STA 16+39.81 TOP 968.73 INV. IN (N) 956.73 INV. IN (E) 956.71 INV. OUT (W) 956.15

SANITARY MANHOLE H-8

Lot 10, Lot 11, Lot 12, Lot 13, Lot 14, Lot 15, Lot 17, Lot 19, Lot 23, Lot 24, Tract A, Tract B, Tract C, Tract D, DETENTION, DEMO, ALGONQUIN STREET, NE SAGAMORE DRIVE

"AS-BUILT"

~~900.10~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE_LSMO
Issue Date: April 10, 2020

Storm Sewer General Layout
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI — MATTHEW J. SCHLICHT — NUMBER PE-2006019708 — PROFESSIONAL ENGINEER

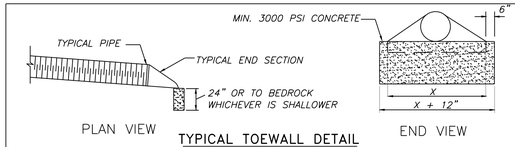
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS

6/25/2021 As-Built

8/18/2021 As-Built

C.300



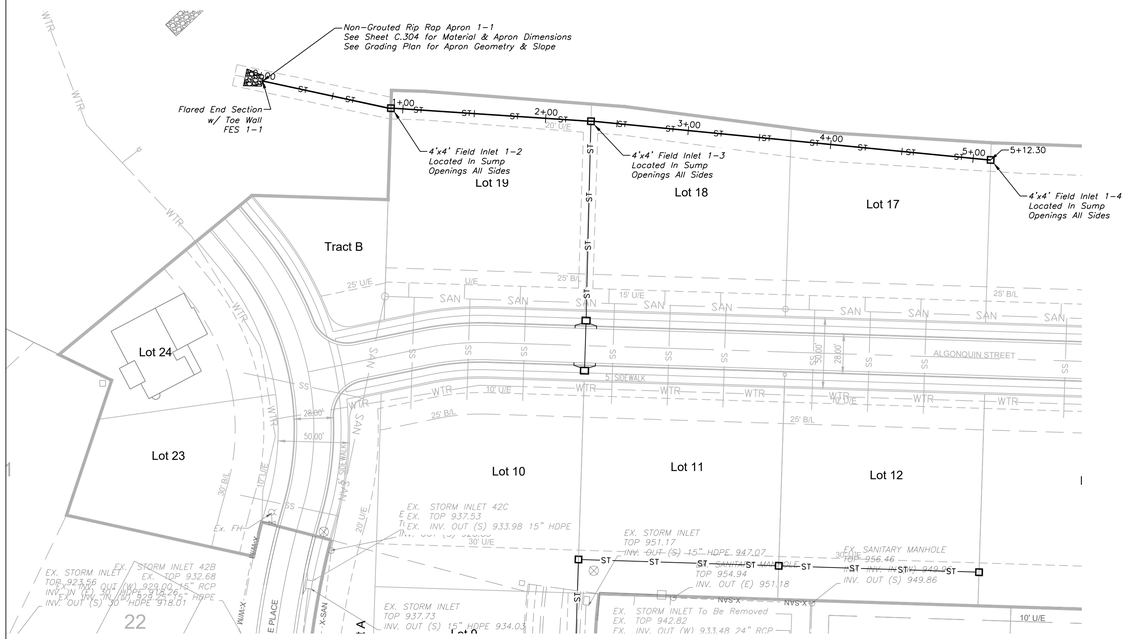
TYPICAL TOEWALL DETAIL
N.T.S.

GRAPHIC SCALE
0 25' 50' 100'

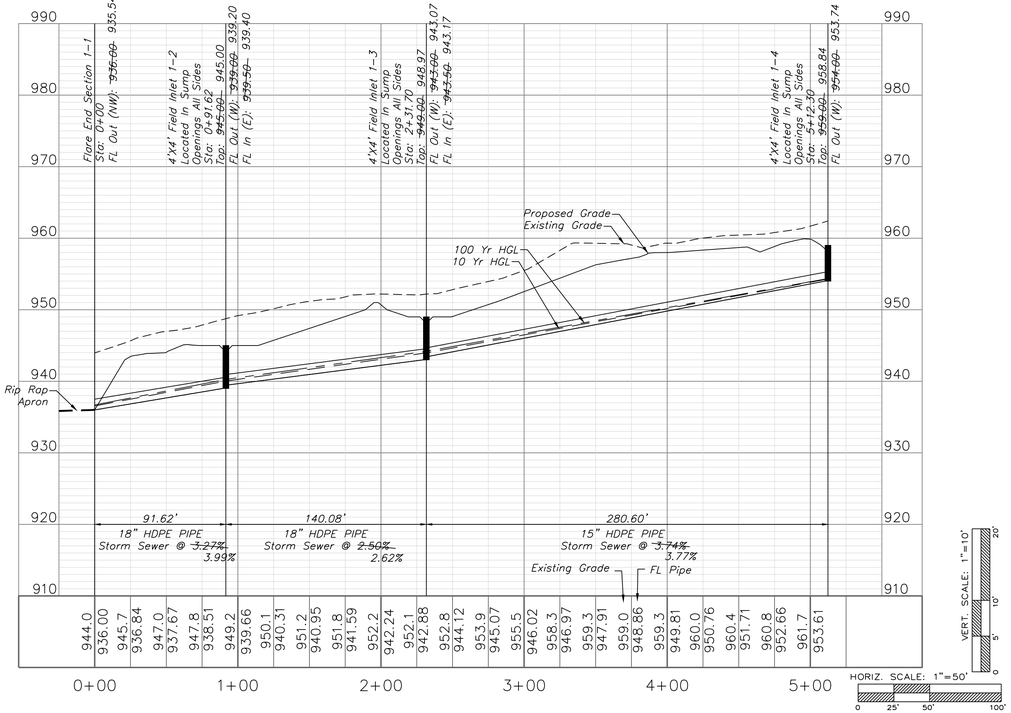
North

STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'



STORM LINE 1

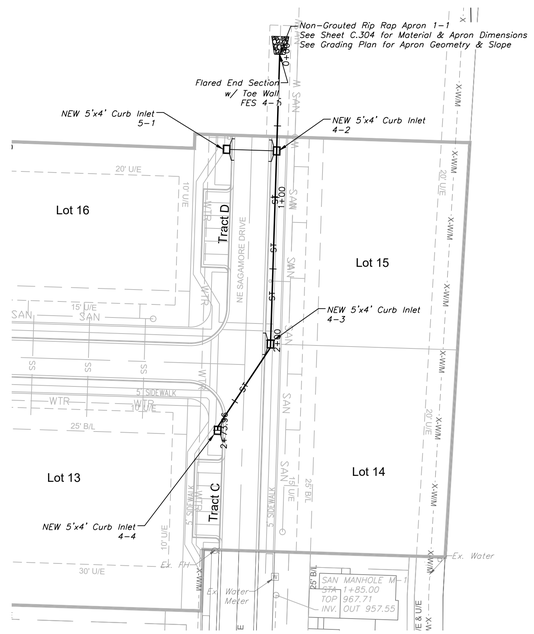


GRAPHIC SCALE
0 25' 50' 100'

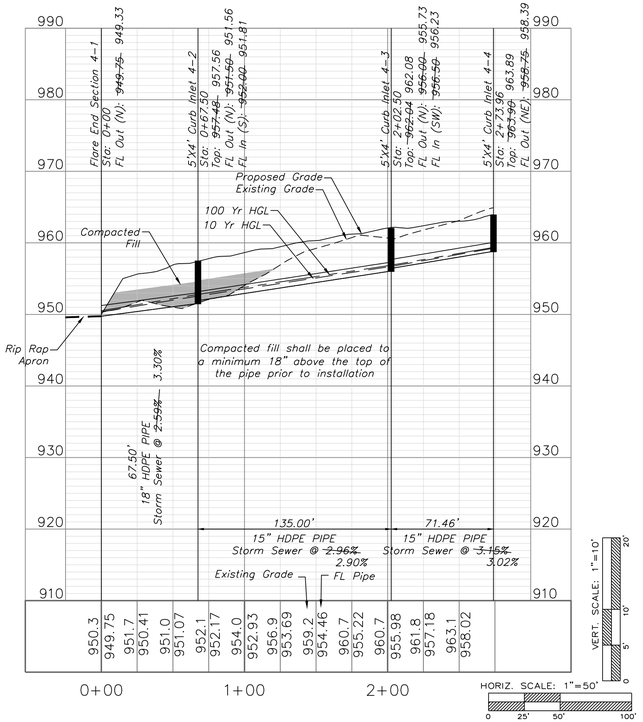
North

STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'



STORM LINE 4

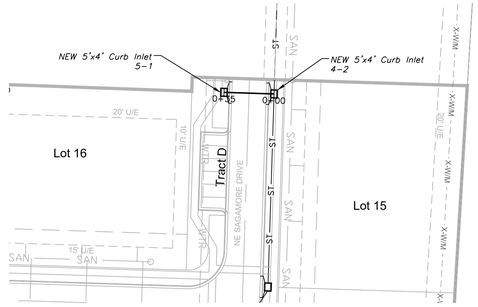


GRAPHIC SCALE
0 25' 50' 100'

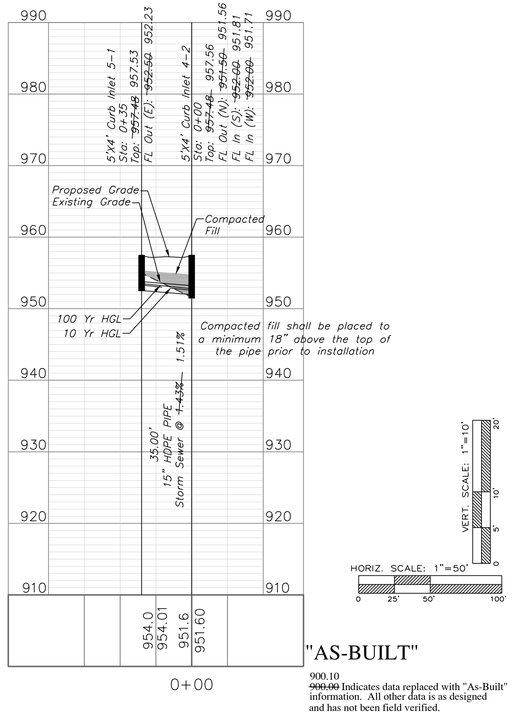
North

STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'



STORM LINE 5



"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE_LSMO
Issue Date: April 10, 2020

Storm Sewer Plan and Profile
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER
2006019708
REGISTERED PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

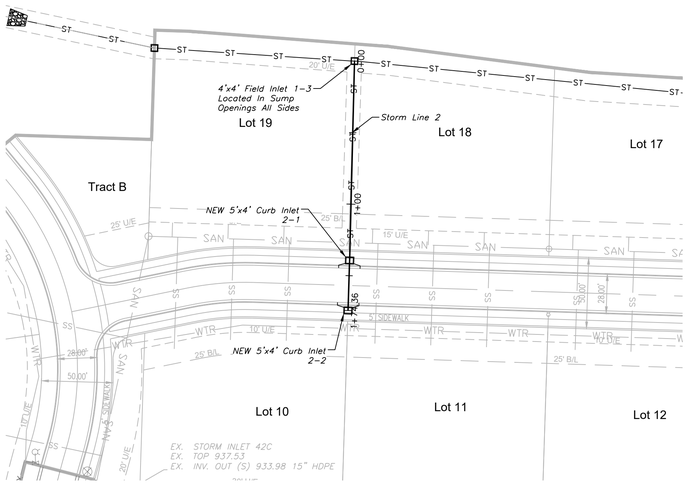
C.301

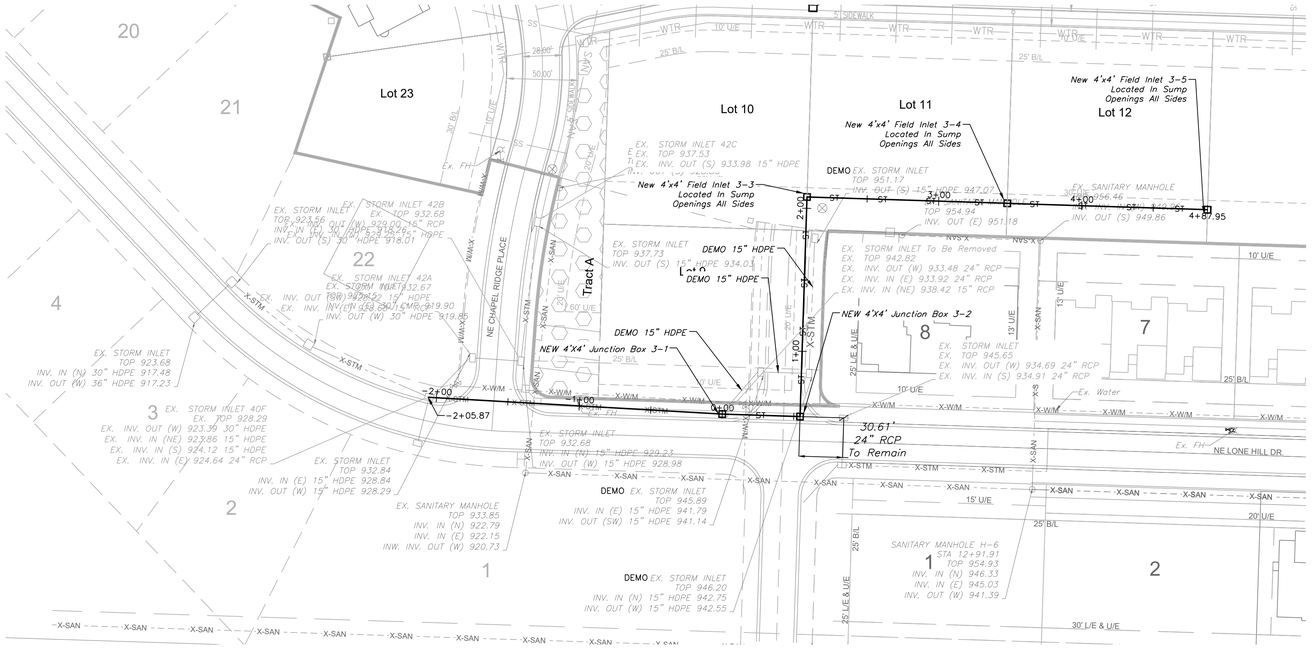
North

GRAPHIC SCALE
0 25' 50' 100'

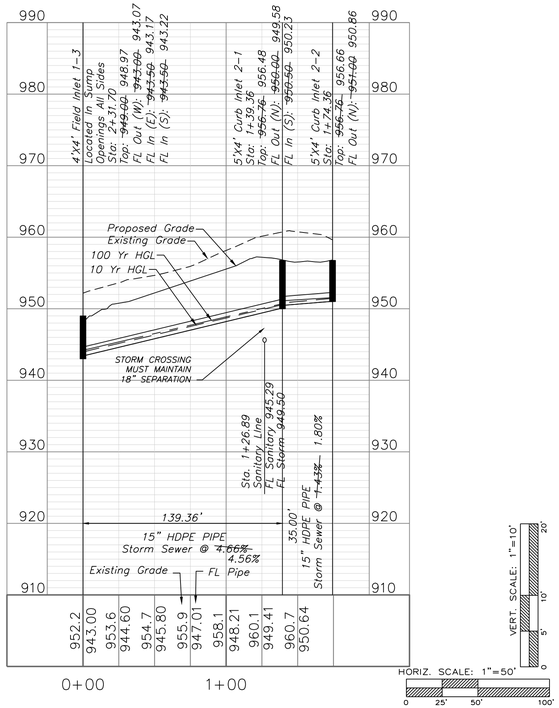
STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'

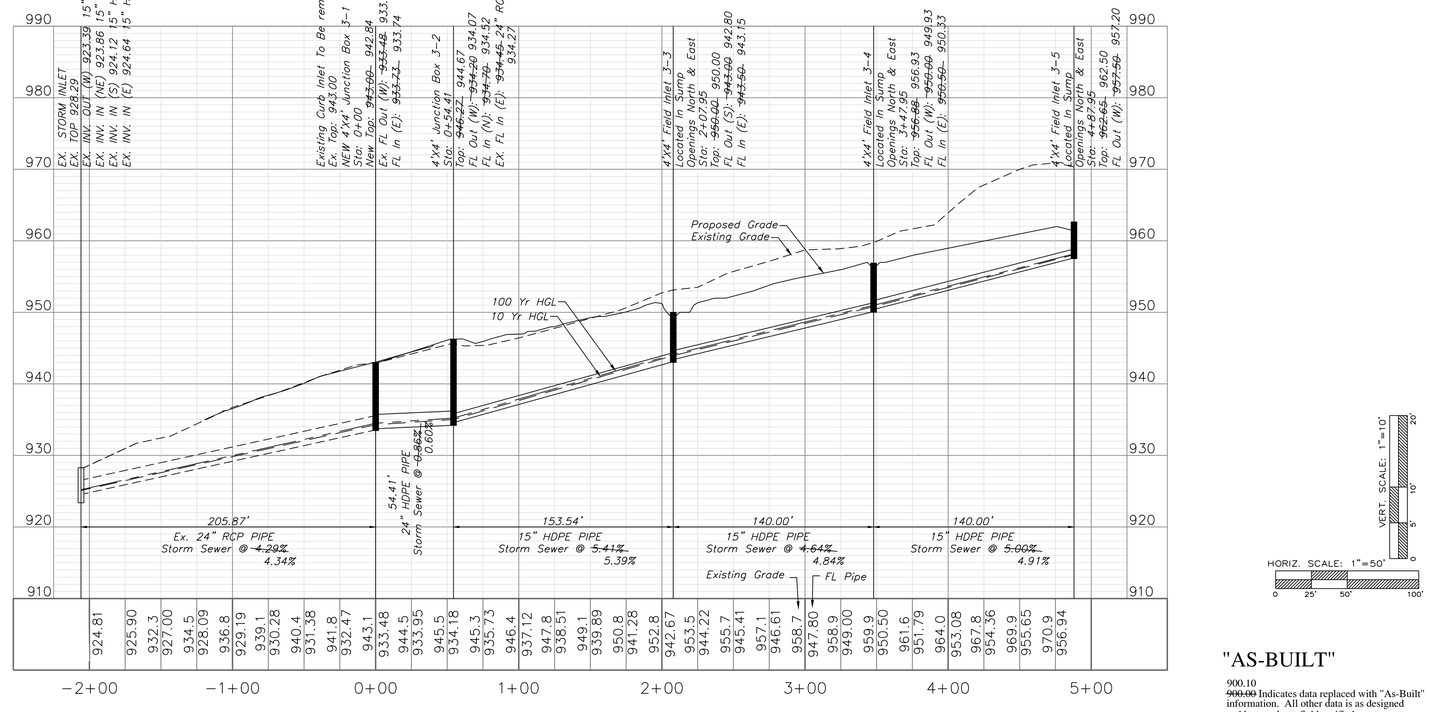




STORM LINE 2



STORM LINE 3



"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE - LSMO
Issue Date: April 10, 2020

Storm Sewer Plan and Profile
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2009019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2009019708
KS PE 19071
OK PE 25226
NE PE E-14335

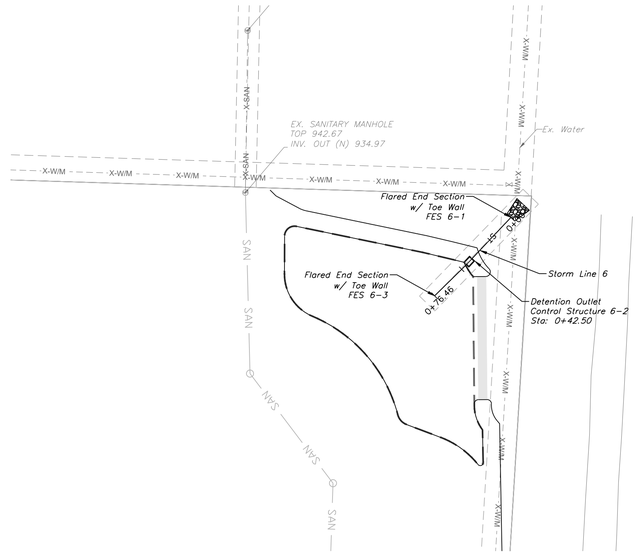
REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

North

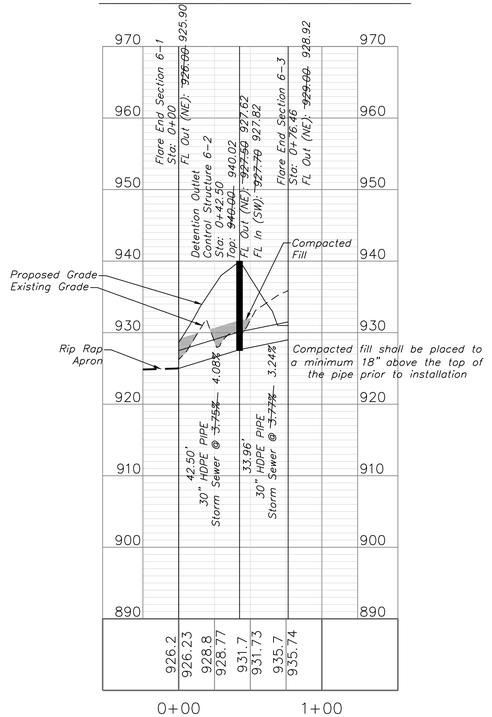
GRAPHIC SCALE
0 25' 50' 100'

STORM SEWER PLAN & PROFILE

SCALE: 1" = 50'



STORM LINE 6



VERT. SCALE: 1"=10'
0 5' 10' 20

HORIZ. SCALE: 1"=50'
0 25' 50' 100'

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE_LAND
Issue Date: April 10, 2020

Storm Sewer Plan and Profile
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2009019708
PROFESSIONAL ENGINEER

Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

10 YEAR INLET																						
D.S. Str.	Str.	Area	InletTime	Int.	RunoffCoeff.	Q =CIA	Q Carry-over	QCaptured	QBypassed	JunctType	CurbHeight	CurbLength	GutterSlope	GutterWidth	CrossSlope, Sw	CrossSlope, Sx	InletDepth	BypassDepth	BypassSpread	GutterDepth	GutterSpread	Bypass Str.
		(ac)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)		(in)	(ft)	(ft/ft)	(ft)	(ft/ft)	(ft/ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1-1	1-2	0.21	5.20	7.21	0.66	1.00	0	1	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.08	n/a	n/a	0.08	3.78	Sag
1-2	1-3	0.87	6.20	6.94	0.66	3.99	0	3.99	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.19	n/a	n/a	0.19	9.51	Sag
1-3	1-4	0.12	5.30	7.18	0.66	0.57	0	0.57	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.05	n/a	n/a	0.05	2.6	Sag
1-3	2-1	0.17	6.00	7.00	0.66	0.78	0	0.3	0.49	Curb	10	5	0.078	2	0.05	0.02	0.11	0.1	1.9	0.11	2.66	EX 42A
2-1	2-2	0.28	6.00	7.00	0.66	1.29	0	0.39	0.9	Curb	10	5	0.078	2	0.05	0.02	0.13	0.12	2.94	0.13	3.74	EX 42C
EX 40F	3-1	0	0.00	0.00	0.00	0.00	....	....	....	JB	....	....	....	....	....	....	....	....	....	....	....	....
3-1	3-2	0	0.00	0.00	0.00	0.00	....	....	....	JB	....	....	....	....	....	....	....	....	....	....	....	....
3-2	3-3	0.36	5.30	7.18	0.66	1.71	0	1.71	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.11	n/a	n/a	0.11	5.4	Sag
3-3	3-4	0.45	5.50	7.13	0.66	2.12	0	2.12	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.12	n/a	n/a	0.12	6.24	Sag
3-4	3-5	0.4	5.50	7.13	0.66	1.88	0	1.88	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.12	n/a	n/a	0.12	5.76	Sag
EX 40F	EX 42A	0.15	6.00	7.00	0.66	0.69	5.79	1.15	5.33	Curb	10	5	0.03	2	0.05	0.02	0.26	0.25	9.35	0.26	10.13	EX 40F
EX 42A	EX 42B	0.43	5.80	7.05	0.66	2.00	0	0.63	1.37	Curb	10	5	0.03	2	0.05	0.02	0.18	0.16	5.04	0.18	6.07	EX 40F
EX 42B	EX 42C	0.84	6.10	6.97	0.66	3.86	0.9	0.84	3.93	Curb	10	5	0.059	2	0.05	0.02	0.21	0.2	7.08	0.21	7.71	EX 40F
4-1	4-2	0.15	5.50	7.13	0.66	0.71	1.07	0.57	1.21	Curb	10	5	0.036	2	0.05	0.02	0.17	0.15	4.5	0.17	5.49	Offsite
4-2	4-3	0.36	6.40	6.89	0.66	1.64	0	0.56	1.07	Curb	10	5	0.03	2	0.05	0.02	0.17	0.15	4.43	0.17	5.51	4-2
4-3	4-4	0.33	5.20	7.21	0.66	1.57	0	0.55	1.02	Curb	10	5	0.03	2	0.05	0.02	0.17	0.15	4.3	0.17	5.4	5-1
4-2	5-1	0.87	5.80	7.05	0.66	4.05	1.02	0.97	4.09	Curb	10	5	0.036	2	0.05	0.02	0.24	0.22	8.04	0.24	8.81	Offsite

10 YEAR PIPE																						
D.S. Str.	U.S. Str.	LineLength	Incr.Area	TotalArea	RunoffCoeff.	IncrC x A	TotalC x A	InletTime	TimeConc	RnfallInt	TotalRunoff	TotalFlow	CapacFull	Veloc	PipeSize	PipeSlope	Inv ElevDn	Inv ElevUp	HGLDn	HGLUp	Grnd/RimDn	Grnd/RimUp
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1-1	1-2	91.62	0.21	1.65	0.66	0.14	1.09	5.2	8	6.5	7.10	7.10	24.70	8.78	18	3.27	936.00	939.00	936.55	940.03	937.50	945.00
1-2	1-3	140.08	0.87	1.44	0.66	0.57	0.95	6.2	7.7	6.6	6.26	6.26	21.58	7.89	18	2.50	939.50	943.00	940.05	943.97	945.00	949.00
1-3	1-4	280.60	0.12	0.12	0.66	0.08	0.08	5.3	5.3	7.2	0.57	0.57	16.24	1.97	15	3.74	943.50	954.00	943.97	954.29	949.00	959.00
1-3	2-1	139.36	0.17	0.45	0.66	0.11	0.3	6	6.1	7	2.07	2.07	18.13	4.36	15	4.66	943.50	950.00	943.97	950.57	949.00	956.76
2-1	2-2	35.00	0.28	0.28	0.66	0.18	0.18	6	6	7	1.29	1.29	10.03	4.44	15	1.43	950.50	951.00	950.80	951.45	956.76	956.76
EX 40F	3-1	205.87	0.00	1.21	0	0	0.8	0	6.6	6.8	5.46	5.46	46.87	7.22	24	4.29	924.64	933.48	925.10	934.30	928.29	943.00
3-1	3-2	54.41	0.00	1.21	0	0	0.8	0	6.5	6.9	5.49	5.49	27.33	5.64	24	0.86	933.73	934.20	934.34	935.03	943.00	946.27
3-2	3-3	153.54	0.36	1.21	0.66	0.24	0.8	5.3	6.2	6.9	5.54	5.54	19.52	9.60	15	5.41	934.70	943.00	935.16	943.95	946.27	950.00
3-3	3-4	140.00	0.45	0.85	0.66	0.3	0.56	5.5	5.9	7	3.94	3.94	18.09	7.28	15	4.64	943.50	950.00	943.95	950.80	950.00	956.88
3-4	3-5	140.00	0.40	0.4	0.66	0.26	0.26	5.5	5.5	7.1	1.88	1.88	18.77	5.94	15	5.00	950.50	957.50	950.80	958.05	956.88	962.65
EX 40F	EX 42A	43.25	0.15	1.42	0.66	0.1	0.94	6	6.5	6.9	6.43	6.43	26.65	11.93	15	10.08	923.86	928.22	924.28	929.24	928.29	932.67
EX 42A	EX 42B	33.90	0.43	1.27	0.66	0.28	0.84	5.8	6.4	6.9	5.77	5.77	6.27	5.72	15	0.94	928.68	929.00	929.62	929.97	932.67	932.68
EX 42B	EX 42C	97.97	0.84	0.84	0.66	0.55	0.55	6.1	6.1	7	3.86	3.86	18.45	4.98	15	4.83	929.25	933.98	929.97	934.77	932.68	937.53
4-1	4-2	67.50	0.15	1.71	0.66	0.1	1.13	5.5	6.8	6.8	7.65	7.65	21.98	8.49	18	2.59	949.75	951.50	950.36	952.57	951.25	957.48
4-2	4-3	135.00	0.36	0.69	0.66	0.24	0.46	6.4	6.4	6.9	3.14	3.14	14.45	5.05	15	2.96	952.00	956.00	952.57	956.71	957.48	962.04
4-3	4-4	71.46	0.33	0.33	0.66	0.22	0.22	5.2	5.2	7.2	1.57	1.57	14.90	5.67	15	3.15	956.50	958.75	956.77	959.25	962.04	963.90
4-2	5-1	35.00	0.87	0.87	0.66	0.57	0.57	5.8	5.8	7	4.05	4.05	10.03	6.10	15	1.43	952.00	952.50	952.57	953.31	957.48	957.48

100 YEAR INLET																						
D.S. Str.	Str.	Area	InletTime	Int.	RunoffCoeff.	Q =CIA	Q Carry-over	QCaptured	QBypassed	JunctType	CurbHeight	CurbLength	GutterSlope	GutterWidth	CrossSlope, Sw	CrossSlope, Sx	InletDepth	BypassDepth	BypassSpread	GutterDepth	GutterSpread	Bypass Str.
		(ac)	(min)	(in/hr)	(C)	(cfs)	(cfs)	(cfs)	(cfs)		(in)	(ft)	(ft/ft)	(ft)	(ft/ft)	(ft/ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1-1	1-2	0.21	5.20	10.91	0.66	1.51	0	1.51	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.1	n/a	n/a	0.1	4.98	Sag
1-2	1-3	0.87	6.20	10.50	0.66	6.03	0	6.03	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.25	n/a	n/a	0.25	12.54	Sag
1-3	1-4	0.12	5.30	10.87	0.66	0.86	0	0.86	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.07	n/a	n/a	0.07	3.42	Sag
1-3	2-1	0.17	6.00	10.58	0.66	1.19	0	0.38	0.81	Curb	10	5	0.078	2	0.05	0.02	0.13	0.11	2.73	0.13	3.55	EX 42A
2-1	2-2	0.28	6.00	10.58	0.66	1.96	0	0.49	1.46	Curb	10	5	0.078	2	0.05	0.02	0.15	0.14	4.02	0.15	4.73	EX 42C
EX 40F	3-1	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....
3-1	3-2	0.00	0.00	0.00	0.00	0.00	....	....	....	MH	....	....	....	....	....	....	....	....	....	....	....	....
3-2	3-3	0.36	5.30	10.87	0.66	2.58	0	2.58	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.14	n/a	n/a	0.14	7.12	Sag
3-3	3-4	0.45	5.50	10.79	0.66	3.20	0	3.2	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.16	n/a	n/a	0.16	8.22	Sag
3-4	3-5	0.40	5.50	10.79	0.66	2.85	0	2.85	0	Dp-Curb	6	16	Sag	....	0.02	0.02	0.15	n/a	n/a	0.15	7.6	Sag
EX 40F	EX 42A	0.15	6.00	10.58	0.66	1.05	9.33	1.46	8.91	Curb	10	5	0.03	2	0.05	0.02	0.31	0.29	11.53	0.31	12.26	EX 40F
EX 42A	EX 42B	0.43	5.80	10.66	0.66	3.03	0	0.78	2.25	Curb	10	5	0.03	2	0.05	0.02	0.21	0.19	6.41	0.21	7.33	EX 40F
EX 42B	EX 42C	0.84	6.10	10.54	0.66	5.85	1.46	1.04	6.27	Curb	10	5	0.059	2	0.05	0.02	0.25	0.23	8.68	0.25	9.26	EX 40F
4-1	4-2	0.15	5.50	10.79	0.66	1.07	1.78	0.72	2.12	Curb	10	5	0.036	2	0.05	0.02	0.2	0.18	5.97	0.2	6.84	Offsite
4-2	4-3	0.36	6.40	10.43	0.66	2.48	0	0.7	1.78	Curb	10	5	0.03	2	0.05	0.02	0.19	0.17	5.73	0.19	6.7	4-2
4-3	4-4	0.33	5.20	10.91	0.66	2.38	0	0.69	1.69	Curb	10	5	0.03	2	0.05	0.02	0.19	0.17	5.59	0.19	6.57	5-1
4-2	5-1	0.87	5.80	10.66	0.66	6.12	1.69	1.21	6.6	Curb	10	5	0.036	2	0.05	0.02	0.27	0.26	9.83	0.27	10.54	Offsite

100 YEAR PIPE																						
D.S. Str.	U.S. Str.	LineLength	Incr.Area	TotalArea	RunoffCoeff.	IncrC x A	TotalC x A	InletTime	TimeConc	RnfallInt	TotalRunoff	TotalFlow	CapacFull	Veloc	PipeSize	PipeSlope	Inv ElevDn	Inv ElevUp	HGLDn	HGLUp	Grnd/RimDn	Grnd/RimUp
		(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
1-1	1-2	91.62	0.21	1.65	0.66	0.14	1.09	5.2	7.8	9.9	10.79	10.79	24.70	10.16	18	3.27	936.00	939.00	936.69	940.26	937.50	945.00
1-2	1-3	140.08	0.87	1.44	0.66	0.57	0.95	6.2	7.6	10	9.51	9.51	21.58	8.46	18	2.50	939.50	943.00	940.26	944.19	945.00	949.00
1-3	1-4	280.60	0.12	0.12	0.66	0.08	0.08	5.3	5.3	10.9	0.86	0.86	16.24	2.07	15	3.74	943.50	954.00	944.19	954.36	949.00	959.00
1-3	2-1	139.36	0.17	0.45	0.66	0.11	0.3	6	6.1	10.5	3.13	3.13	18.13	4.42	15	4.66	943.50	950.00	944.19	950.71	949.00	956.76
2-1	2-2	35.00	0.28	0.28	0.66	0.18	0.18	6	6	10.6	1.96	1.96	10.03	5.02	15	1.43	950.50	951.00	950.87	951.56	956.76	956.76
EX 40F	3-1	205.87	0.00	1.21	0	0	0.8	0	6.6	10.3	8.26	8.26	46.87	8.17	24	4.29	924.64	933.48	925.21	934.50	928.29	943.00
3-1	3-2	54.41	0.00	1.21	0	0	0.8	0	6.5	10.4	8.31	8.31	27.33	6.26	24	0.86	933.73	934.20	934.50	935.23	943.00	946.27
3-2	3-3	153.54	0.36	1.21	0.66	0.24	0.8	5.3	6.2	10.5	8.38	8.38	19.52	11.23	15	5.41	934.70	943.00	935.27	944.13	946.27	950.00
3-3	3-4	140.00	0.45	0.85	0.66	0.3	0.56	5.5	5.9	10.6	5.95	5.95	18.09	7.66	15	4.64	943.50	950.00	944.13	950.99	950.00	956.88
3-4	3-5	140.00	0.40	0.4	0.66	0.26	0.26	5.5	5.5	10.8	2.85	2.85	18.77	5.32	15	5.00	950.50	957.50	950.99	958.18	956.88	962.65
EX 40F	EX 42A	43.25	0.15	1.42	0.66	0.1	0.94	6	6.5	10.4	9.74	9.74	26.65	14.07	15	10.08	923.86	928.22	924.38	929.40	928.29	932.67
EX 42A	EX 42B	33.90	0.43	1.27	0.66	0.28	0.84	5.8	6.4	10.4	8.74	8.74	6.27	7.12	15	0.94	928.68	929.00	929.93	930.55	932.67	932.68
EX 42B	EX 42C	97.97	0.84	0.84	0.66	0.55	0.55	6.1	6.1	10.5	5.85	5.85	18.45	5.22	15	4.83	929.25	933.98	931.73	934.96	932.68	937.53
4-1	4-2	67.50	0.15	1.71	0.66	0.1	1.13	5.5	6.8	10.3	11.59	11.59	21.98	9.87	18	2.59	949.75	951.50	950.52	952.80	951.25	957.48
4-2	4-3	135.00	0.36	0.69	0.66	0.24	0.46	6.4	6.4	10.4	4.75	4.75	14.45	5.44	15	2.96	952.00	956.00	952.80	956.88	957.48	962.04
4-3	4-4	71.46	0.33	0.33	0.66	0.22	0.22	5.2	5.2	10.9	2.38	2.38	14.90	5.70	15	3.15	956.50	958.75	956.88	959.37	962.04	963.90
4-2	5-1	35.00	0.87	0.87	0.66	0.57	0.57	5.8	5.8	10.7	6.12	6.12	10.03	6.62	15	1.43	952.00	952.50	952.80	953.50	957.48	957.48

EXAMPLE RIPRAP APRON CALCULATIONS

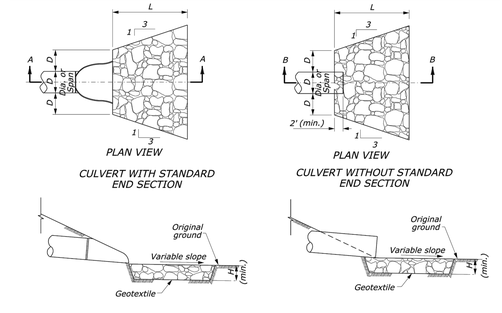
Field End Section #		6-1	
Q =	2.24	cfs	D_{50} = riprap size, m(ft)
D =	2.5	ft	Q = design discharge, m^3/s (ft^3/s)
Tw =	1	ft	D = culvert diameter (circular), m(ft)
g =	32.2	ft/s^2	Tw = tailwater depth, m(ft), if unknown use 0.4*D
			g = acceleration due to gravity, 9.81 m/s^2 (32.2 ft/s^2)
D_{50} =	0.20	inches	Subcritical Flow
S =	0.0375	ft/ft	S = pipe slope, m/m(ft/ft)
n =	0.01		n = manning's roughness coefficient, unitless
Qcap =	103.04	ft^3/s	Qcap = full pipe capacity, m^3/s(ft^3/s)
Q/Qcap =	0.02		Q/Qcap = design discharge/full pipe capacity, unitless
d/D =	0.10		d/D = water depth/pipe diameter, unitless
d =	0.25	ft	d = depth of flow, m(ft)
Central <	54.55	deg	lookup, degrees
Aseg =	0.59	ft^2	lookup * pipe area, m^2(ft^2)
V =	3.81	ft/s	V = velocity of flow segment, m^2/s(ft^2/s)
Fr =	1.34		Fr > 1 Supercritical, Fr = 1 Critical, Fr < 1 Subcritical
Flow =	Supercritical		If flow is Supercritical adjust culvert diameter
D' =	1.38	ft	D' = culvert diameter adjustment, m(ft)
yn =	0.25	ft	yn = normal (supercritcal) depth in culvert, m(ft)
D_{50} =	0.45	inches	
Classify	0.45	inches	

Class 1 Use D_{50} = 5

Apron Length =	4 * D	10.00 ft	Use	10.00 ft
Apron Depth =	3.5 * D_{50}	17.50 inches	Use	18.00 inches
Apron Width =	3*D+(2/3)L	14.17 ft	Use	15.00 ft

				RipRap Apron					
RipRap Apron	Area (ac.)	Q100 (cfs)	Dia. (ft)	Class	D_{50} (in)	Length (ft)	Depth (in)	Width (ft)	Slope (%)
1-1	1.65	10.79	1.5	3	10	8	24	10	3.27
4-1	1.71	11.59	1.5	3	10	8	24	10	2.59
6-1	3.42	2.24	2.5	1	5	10	18	15	3.75

STANDARD RIPRAP APRON DETAIL



NOTES:
1. ALL RIPRAP APRONS SHALL CONFORM TO THE STANDARD CONFIGURATION SHOWN IN THE STANDARD DETAIL ABOVE UNLESS OTHERWISE NOTED. PLAN VIEW DIMENSIONS SHOWN SHALL BE MET OR EXCEEDED INCLUDING AREAS OF LONGITUDINAL AND/OR TRANSVERSE SLOPE.
2. DIMENSIONS FOR EACH RIPRAP APRON AND ASSOCIATED RIPRAP ARE DETAILED IN THE TABLE ABOVE.
3. WIDTH REFERS TO DIMENSION OPPOSITE PIPE, AND DEPTH IS DIMENSION H.
4. GEOTEXTILE SHALL BE "GEI WORKS 4 OUNCE" NON-WOVEN FILTER FABRIC DESIGNED FOR FILTRATION, STABILIZATION AND SEPARATION WRAPPED CONTINUOUSLY ALONG THE SIDEWALLS AND BOTTOM OF THE PREPARED AREA OR SLOPE.
   - WATER FLOW = 120 GPM/SF
   - GRAB STRENGTH (MIN) = 400 N
   - PUNCTURE STRENGTH (MIN) = 178 N
   - TRAPEZOIDAL TEAR (MIN) = 133 N
   - ELONGATION (MIN) = 15%

"AS-BUILT"

900.10
~~900.00~~ Indicates data replaced with "As-Built" information. All other data is as designed and has not been field verified.

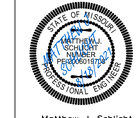
ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082
P:(816) 623-9888 F:(816)623-9849

Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: TOWNHOMES OF CHAPEL RIDGE - 2ND PLAT
Issue Date: April 10, 2020

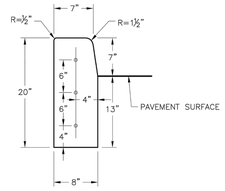
Storm Sewer Tables 10 and 100 Year
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri



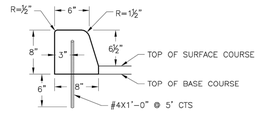
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
6/25/2021 As-Built
8/18/2021 As-Built

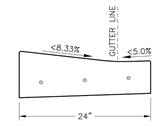
C.304



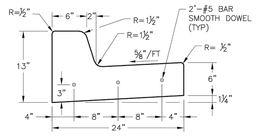
STRAIGHT CURB
(TYPE C-1)



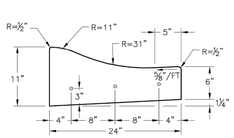
DOWELLED CURB
(TYPE DC)



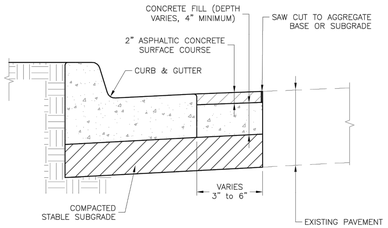
CURB & GUTTER DETAIL AT RAMP
(ADA SLOPE REQUIREMENTS)



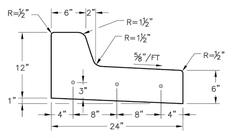
STRAIGHT BACK CURB &
GUTTER
(TYPE CG-1)



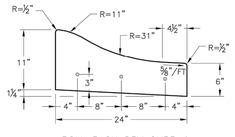
ROLL BACK CURB &
GUTTER
(TYPE CG-2)



CURB REPLACEMENT DETAIL



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



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

GENERAL NOTES

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

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

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

Sheet Name: CURB & GUTTER DETAIL

Drawn By: MJF
Checked By: DL
Date: 06/17
Proj. #

GEN-4

Underdrain Notes:

1. All roadway excavation in rock will be undercut no less than 15" for the full width of the roadway as shown.
2. In areas where underdrains are not required, undercut and overbreakage in limestone and shale shall be brought to within 6" of the subgrade line with properly compacted crushed stone, shot rock, and/or rock rubble. The remaining 6" shall conform to Standard Specifications Section 2202.
3. Layers of earth or shale shall not be permitted for backfill up to the bottom of the crushed stone.
4. A minimum of 12" of select soil (topsoil) shall be placed on exposed rock cut or fill slopes outside the limits of the roadway. All rock and shale slopes shall be benched @ maximum 2' vertical intervals prior to placement of select soil.
5. Proposed underdrain pipe layout, flowline elevations, inlet connection points, and details shall be approved prior to construction by the City Engineer.
6. Where pipe underdrains are used, all underdrain outlet pipes shall be solid wall with watertight joints. All outlet pipes shall be tied into the nearest storm sewer inlet as approved. Where edge underdrains are used, all underdrain outlet pipes shall be solid wall with manufacturer joints approved by the City Engineer. All connections between pipes and edge connectors or curb inlets shall be made with 3' minimum length of pipe.
7. All underdrain pipes shall be installed at a minimum slope of 1%. Underdrain pipe shall be installed with the perforations placed down.
8. Blanket underdrains shall be placed on bedrock unless otherwise directed by the City Engineer. Undercut and overbreakage in limestone and shale shall be brought to within 12" of the subgrade line with properly compacted crushed stone, shot rock and/or rock rubble.
9. All filter fabric used for pipe underdrain construction shall conform to Standard Specifications Section 2203.6.
10. The Contractor may, at his option, use either pipe underdrain or edge underdrain, but shall not mix underdrain types within any underdrain system.
11. All edge underdrains shall be held in the center of the trench by mechanical methods while placing granular backfill. See detail this sheet. Alternate methods may be used with prior approval by the City Engineer.
12. Blanket underdrain aggregate, pipe underdrain aggregate, pipe underdrain, edge underdrain and outlet pipe shall conform to Standard Specifications Section 2203.6

AMERICAN PUBLIC WORKS ASSOCIATION
KANSAS CITY METROPOLITAN CHAPTER
UNDERDRAIN DETAILS
STANDARD DRAWING UD-1
ADOPTED: MAY 23, 2001

GENERAL NOTE:
1 ~ ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082

Professional Registration
Missouri
Engineering 2005032186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE LSMO
Issue Date: April 10, 2020

Construction Details

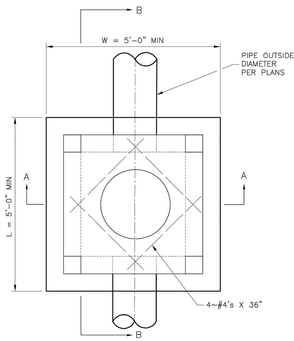
Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI
MATTHEW J. SCHLICHT
NUMBER PE-2006019708
PROFESSIONAL ENGINEER

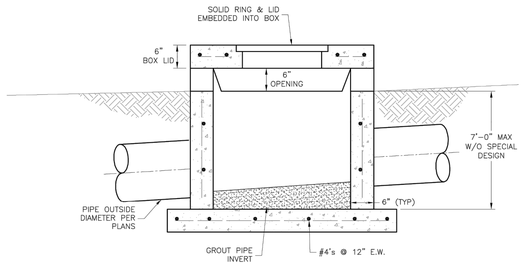
Matthew J. Schlicht
MO PE 2006019708
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
1 REV. 5/1/2020
2 REV. 5/12/2020
3 REV. 6/4/2020
4 REV. 7/9/2020

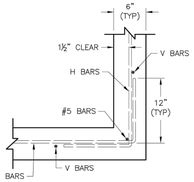
C.600



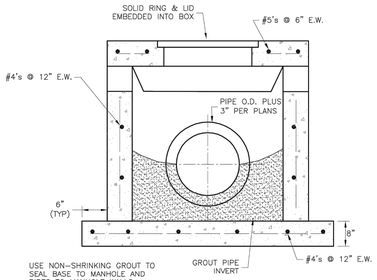
PLAN VIEW



SECTION B–B



WALL CORNER DETAIL



SECTION A–A

GENERAL NOTES:

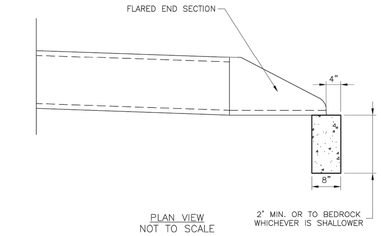
1. LOCATE RING AND COVER OVER OUTLET ON BLANK WALL.
2. USE ¾" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. STEPS REQUIRED AT 16" O.C. WHEN DEPTH FROM TOP OF CASTING TO INVERT EXCEEDS 3' ON BLANK WALL IF POSSIBLE.
5. BOXOUTS WILL NOT BE ALLOWED TO PROJECT THROUGH THE CORNERS OF THE STRUCTURE.
6. THE MINIMUM REINFORCING SHALL BE 1 H–BAR OVER A CAST–IN–PLACE PIPE AND 2 H–BARS OVER A PRECAST BOXOUT.
7. SHOW FIELD INLET ORIENTATION ON PLANS PLUS NUMBER AND SIDE OF OPENINGS.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

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

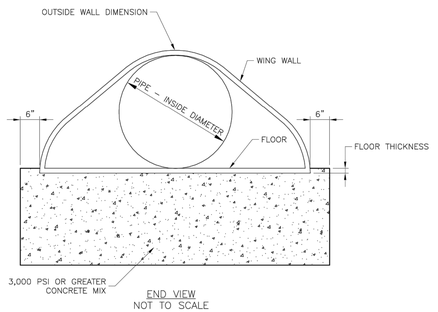
Project: STANDARD DETAILS CITY OF LEE'S SUMMIT, MO LEE'S SUMMIT, JACKSON COUNTY, MO
Drawn Name: FIELD INLET DETAIL

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

STM-2



PLAN VIEW
NOT TO SCALE



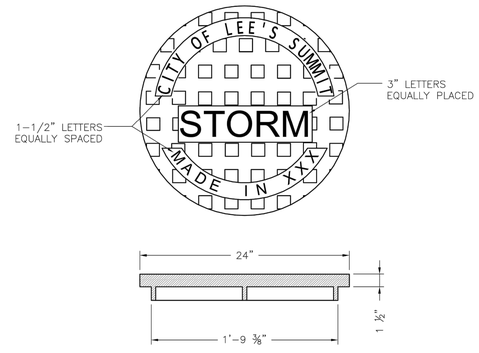
END VIEW
NOT TO SCALE

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

FLARED END SECTION SUPPORT DETAIL

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

STM-5



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

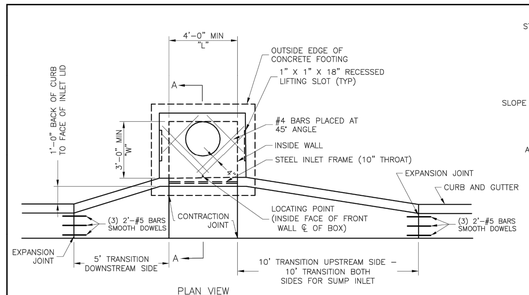
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCT LIST.

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

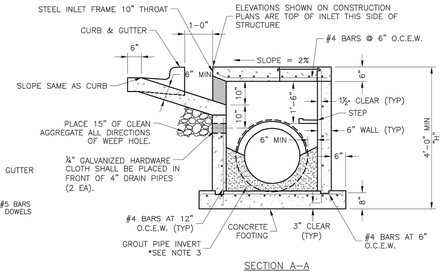
STORM MANHOLE COVER DETAIL

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

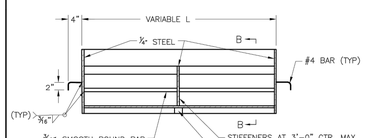
STM-6



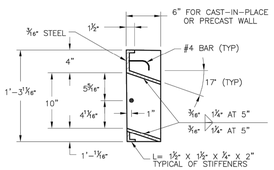
PLAN VIEW



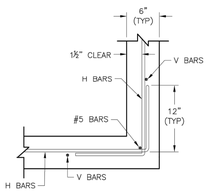
SECTION A–A



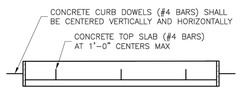
FRONT ELEVATION



SECTION B–B



WALL CORNER DETAIL



PLAN VIEW

STEEL FRAME NOTES:

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

GENERAL NOTES:

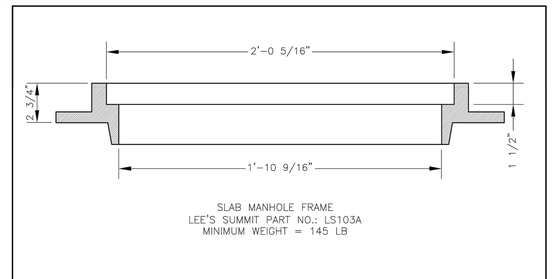
1. THE FIRST DIMENSION LISTED IN THE CONSTRUCTION NOTES IS THE "L" DIMENSION. THE SECOND DIMENSION IS THE "W" DIMENSION.
2. FLOW LINES LISTED ON THE PROJECT PLANS ARE LISTED AT THE INSIDE FACE OF THE WALL.
3. FLOOR OF INLET GROUTED AND SHAPED TO MATCH PIPE INVERT TO PROVIDE SMOOTH FLOW.
4. LOCATE MH RING AND COVER ON BLANK WALL IF POSSIBLE.
5. STEPS SHALL BE SPACED AT 1'–4" O.C. VERTICALLY ON BLANK WALL IF POSSIBLE.
6. BEVEL ALL EXPOSED EDGES WITH ¾"CHAMFER OR ½" TOOLED EDGE.
7. ON–GRADE INLETS SHALL CONFORM TO THE STREET GRADE AND SUMP INLETS SHALL BE LEVEL.
8. PRECAST LIDS SHALL BE PINNED, SEALED WITH NON–SHRINKABLE GROUT AND REMOVABLE FOR FUTURE MAINTENANCE.
9. LIFTING RINGS SHALL BE REMOVED AND SEALED WITH NON–SHRINKABLE GROUT
10. FOR RING AND COVER SEE THE STORMWATER APPROVED PRODUCT LIST.

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

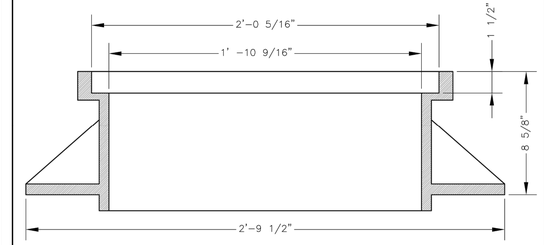
Project: STANDARD DETAILS CITY OF LEE'S SUMMIT, MO LEE'S SUMMIT, JACKSON COUNTY, MO
Drawn Name: CURB INLET DETAIL

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

STM-1



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



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

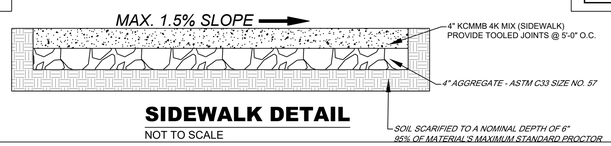
*COVER AND FRAME MODEL INFORMATION REFER TO THE STORMWATER APPROVED PRODUCTS LIST.

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

STORM MANHOLE FRAME DETAIL

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

STM-7



SIDEWALK DETAIL
NOT TO SCALE

GENERAL NOTE:
1 ~ ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF LEE'S SUMMIT DESIGN AND CONSTRUCTION MANUAL AS ADOPTED BY ORDINANCE 5813.

ENGINEERING SOLUTIONS
ENGINEERING & SURVEYING
50 SE 30TH STREET
LEE'S SUMMIT, MO 64082

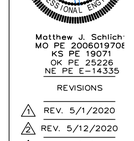
Professional Registration
Missouri
Engineering 2005002186-D
Surveying 2005008319-D
Kansas
Engineering E-1695
Surveying LS-218
Oklahoma
Engineering 6254
Nebraska
Engineering CA2821

THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri

Project: VILLAS OF CHAPEL RIDGE LSMO
Issue Date: April 10, 2020

Construction Details

Construction Plans for:
THE TOWNHOMES OF CHAPEL RIDGE-2ND PLAT
LOTS 9-19 & TRACTS A-D
Lee's Summit, Jackson County, Missouri



Matthew J. Schlicht
MO PE 2006019706
KS PE 19071
OK PE 25226
NE PE E-14335

REVISIONS
1 REV. 5/1/2020
2 REV. 5/12/2020
3 REV. 6/4/2020
4 REV. 7/9/2020

C.601