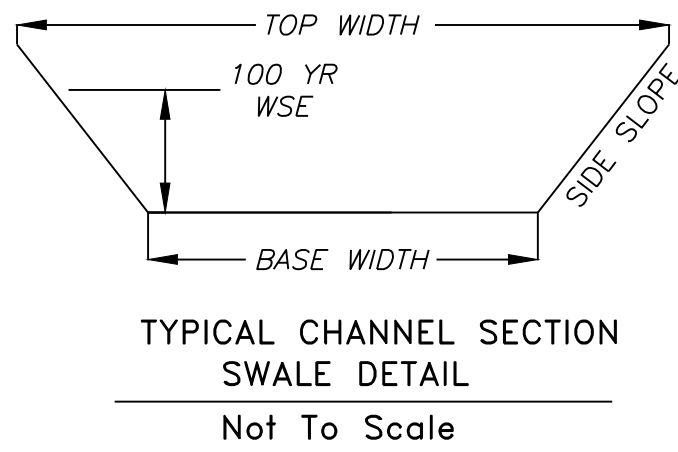


Notes

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.

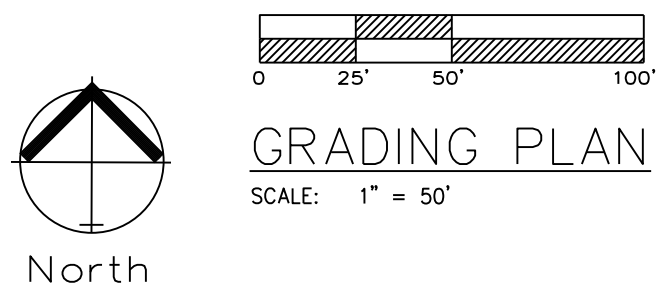
NOTE: Swale sections extend the entire length between upstream and downstream structures with the exception of a transition at each structure. The minimum swale depth shall be 6" over the 100-year water surface elevation.



| 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 (f.p.s.) | Velocity 100Yr (f.p.s.) | Hydraulic Radius (ft) | Shear Stress (p.s.f.) |
| 1-1                              | 0.82                    | 2.00          | 5               | 6                | 0.11            | 0.62                    | 1.32                    | 0.10                  | 0.12                  |
| 2-2                              | 1.30                    | 2.00          | 5               | 6                | 0.14            | 0.82                    | 1.59                    | 0.12                  | 0.15                  |

Note: See Table 8.10 of the APWA / MARC BMP Manual for design Summary for Native Vegetation Swales.

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



| Estimated Cut / Fill Quantities |                         |
|---------------------------------|-------------------------|
| Site Area                       | 9.65 Acres              |
| Cut Volume (Unadjusted)         | 17,287 c.y.             |
| Fill Volume (Unadjusted)        | 20,068 c.y.             |
| Street & Sidewalk Cut Volume    | 1,680 c.y.              |
| Net Fill                        | 1,101 c.y. (Unadjusted) |



**RECORD DRAWING**  
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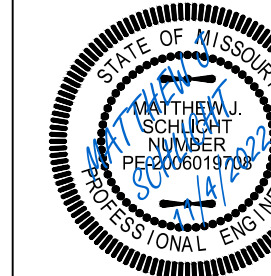
Date: 11/4/2022  
Certified by: Matthew J. Schlicht  
Title: Engineer  
Firm: Engineering Solutions

Master Drainage Plan 1 of 3:

Grading Plan  
Street, Stormwater, Master Drainage Plans for:  
Napa Valley 5th Plat  
Lee's Summit, Jackson County, Missouri

Professional Registration  
Missouri  
Engineering 2005002186-D  
Surveying 2005008319-D  
Kansas  
Engineering E-1685  
Surveying LS-218  
Oklahoma  
Engineering 6254  
Nebraska  
Engineering CA2821

Project:  
NAPA VALLEY LS MO  
Issue Date:  
October 31, 2022



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

REVISIONS  
11/4/2022 As-Built



| Lot Number | Basement Type | MBOE |
|------------|---------------|------|
| 166        | Walkout       | N/A  |
| 167        | Walkout       | N/A  |
| 168        | Walkout       | N/A  |
| 169        | Walkout       | N/A  |
| 170        | Walkout       | N/A  |
| 171        | Walkout       | N/A  |
| 172        | Walkout       | N/A  |
| 173        | Walkout       | N/A  |
| 174        | Walkout       | N/A  |
| 175        | Full          | N/A  |
| 176        | Full          | N/A  |
| 177        | Full          | N/A  |
| 178        | Daylight      | N/A  |
| 179        | Walkout       | N/A  |
| 180        | Walkout       | N/A  |
| 181        | Walkout       | N/A  |
| 182        | Daylight      | N/A  |
| 183        | Full          | N/A  |
| 184        | Full          | N/A  |
| 185        | Full          | N/A  |
| 186        | Full          | N/A  |
| 187        | Daylight      | N/A  |
| 188        | Daylight      | N/A  |
| 189        | Walkout       | N/A  |
| 190        | Walkout       | N/A  |
| 191        | Walkout       | N/A  |
| 192        | Walkout       | N/A  |
| 193        | Walkout       | N/A  |
| 194        | Daylight      | N/A  |
| 195        | Full          | N/A  |
| 196        | Full          | N/A  |

0 20' 40' 80'

SPOT ELEVATIONS

SCALE: 1" = 40'

North

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Nebraska  
Engineering CA2821

Project: NAPA VALLEY L&MO  
Issue Date: October 31, 2022

Master Drainage Plan 2 of 3:  
Spot Elevations  
Street, Stormwater Master Drainage Plans for:  
Napa Valley 5th Plat  
Lee's Summit, Jackson County, Missouri

Project: NAPA VALLEY L&MO  
Issue Date: October 31, 2022

Master Drainage Plan 2 of 3:  
Spot Elevations  
Street, Stormwater Master Drainage Plans for:  
Napa Valley 5th Plat  
Lee's Summit, Jackson County, Missouri

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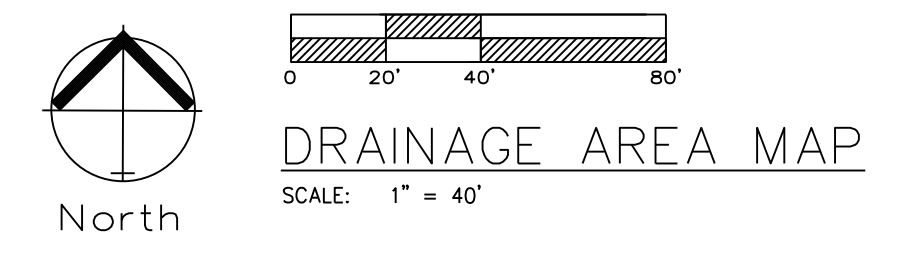
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Certified by: Matthew J. Schlicht  
Title: Engineer  
Firm: Engineering Solutions

REVISIONS

11/4/2022 As-Built

C.201



APWA STORM DRAINAGE "TC" COMPUTATIONS FOR : NAPA VALLEY 5TH PLAT

| yellow areas are self computing<br>overwrite if necessary |                |                  |            |            | Surface types:<br>SURFACE CODES<br>"C" Values |              | Asph/ConcBus/Com          |            | Dirt                     |            | Grass/Park |   | Lake            |        | MultiFam                   |      | SnglFam |     | Undev                                         |     | Other |      |                                 |                                 |                               |                               |               |            |  |  |
|-----------------------------------------------------------|----------------|------------------|------------|------------|-----------------------------------------------|--------------|---------------------------|------------|--------------------------|------------|------------|---|-----------------|--------|----------------------------|------|---------|-----|-----------------------------------------------|-----|-------|------|---------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------|------------|--|--|
|                                                           |                |                  |            |            |                                               |              | A                         |            | B                        |            | G          |   | L               |        | M                          |      | S       |     | U                                             |     | Z     |      |                                 |                                 |                               |                               |               |            |  |  |
|                                                           |                |                  |            |            |                                               |              | 0.90                      |            | 0.87                     |            | 0.60       |   | 0.30            |        | 0.90                       |      | 0.66    |     | 0.51                                          |     | 0.3   |      |                                 |                                 |                               |                               |               |            |  |  |
|                                                           |                |                  |            |            |                                               |              | Overwrite<br>if necessary |            | Length - DnElev or Slope |            |            |   | SURFACE<br>CODE |        | P=Paved<br>U=Unpaved       |      |         |     | Overwrite Slope or Elevations<br>if necessary |     |       |      |                                 |                                 |                               |                               |               |            |  |  |
| TOTAL WATERSHED                                           |                |                  |            |            |                                               |              | OVERLAND FLOW - 100' MAX  |            |                          |            |            |   | P<br>or<br>U    |        | CHANNEl FLOW - FIRST REACH |      |         |     |                                               |     |       |      |                                 |                                 |                               |                               |               |            |  |  |
|                                                           |                |                  |            |            |                                               |              | OVR/LND                   |            | UP                       |            | DN         |   | SLOPE           |        | CHANNEL<br>LENGTH          |      | UP      |     | DN                                            |     | SLOPE |      | VELOCITY                        |                                 |                               |                               |               |            |  |  |
|                                                           |                |                  |            |            |                                               |              | F/S                       |            | ELEV                     |            | ELEV       |   | %               |        | LENGTH                     |      | ELEV    |     | ELEV                                          |     | %     |      | F/S                             |                                 |                               |                               |               |            |  |  |
| AREA<br>ID                                                | TOTAL<br>ACRES | WTRSHD<br>LENGTH | UP<br>ELEV | DN<br>ELEV | SURFACE<br>CODE                               | "C"<br>VALUE | OVR/LND<br>LENGTH         | UP<br>ELEV | DN<br>ELEV               | SLOPE<br>% |            |   |                 |        |                            |      |         |     |                                               |     |       |      | Cal<br>Overland<br>Flow<br>T(I) | Used<br>Min 5<br>Max 15<br>T(I) | Cal<br>Channel<br>One<br>T(T) | Cal<br>Channel<br>Two<br>T(T) | Total<br>T(T) | AREA<br>ID |  |  |
| 1                                                         | 0.54           | 359.00           | 1015.00    | 1010.50    | S                                             | 0.51         | 59.0                      | 1015.0     | 1013.70                  | 2.2        |            | P | 300.0           | 1013.7 | 1010.5                     | 1.07 | 2.1     | 6.3 | 6.3                                           | 2.4 | 0.0   | 8.7  | 1                               |                                 |                               |                               |               |            |  |  |
| 2                                                         | 0.57           | 384.00           | 1016.00    | 1010.20    | S                                             | 0.51         | 49.0                      | 1016.0     | 1015.00                  | 2.0        |            | P | 335.0           | 1015.0 | 1010.2                     | 1.43 | 2.4     | 5.9 | 5.9                                           | 2.3 | 0.0   | 8.2  | 2                               |                                 |                               |                               |               |            |  |  |
| 3                                                         | 0.32           | 333.00           | 1010.50    | 1005.00    | S                                             | 0.51         | 26.0                      | 1010.5     | 1009.80                  | 2.7        |            | P | 307.0           | 1009.8 | 1005.0                     | 1.56 | 2.5     | 3.9 | 5.0                                           | 2.0 | 0.0   | 7.0  | 3                               |                                 |                               |                               |               |            |  |  |
| 4                                                         | 0.35           | 369.00           | 1012.20    | 1003.00    | S                                             | 0.51         | 47.0                      | 1012.2     | 1011.00                  | 2.6        |            | P | 322.0           | 1011.0 | 1003.0                     | 2.48 | 3.2     | 5.3 | 5.3                                           | 1.7 | 0.0   | 7.0  | 4                               |                                 |                               |                               |               |            |  |  |
| 5                                                         | 0.32           | 258.00           | 1007.20    | 994.50     | S                                             | 0.51         | 41.0                      | 1007.2     | 1004.00                  | 7.8        |            | P | 217.0           | 1004.0 | 994.5                      | 4.38 | 4.3     | 3.4 | 5.0                                           | 0.9 | 0.0   | 5.9  | 5                               |                                 |                               |                               |               |            |  |  |
| 6                                                         | 0.24           | 221.00           | 1005.00    | 994.00     | S                                             | 0.51         | 36.0                      | 1005.0     | 1003.00                  | 5.6        |            | P | 185.0           | 1003.0 | 994.0                      | 4.86 | 4.5     | 3.6 | 5.0                                           | 0.7 | 0.0   | 5.7  | 6                               |                                 |                               |                               |               |            |  |  |
| 7                                                         | 0.78           | 236.00           | 995.00     | 991.00     | S                                             | 0.51         | 49.0                      | 995.0      | 992.50                   | 5.1        |            | P | 187.0           | 992.5  | 991.0                      | 0.80 | 1.8     | 4.3 | 5.0                                           | 1.7 | 0.0   | 6.7  | 7                               |                                 |                               |                               |               |            |  |  |
| 8                                                         | 2.26           | 508.00           | 1016.00    | 999.00     | S                                             | 0.51         | 100.0                     | 1016.0     | 1014.00                  | 2.0        |            | U | 408.0           | 1014.0 | 999.0                      | 3.68 | 3.1     | 8.4 | 8.4                                           | 2.2 | 0.0   | 10.6 | 8                               |                                 |                               |                               |               |            |  |  |
| 9                                                         | 0.46           | 133.00           | 1008.50    | 999.00     | S                                             | 0.51         | 100.0                     | 1008.5     | 1000.00                  | 8.5        |            | U | 33.0            | 1000.0 | 999.0                      | 3.03 | 2.8     | 5.2 | 5.2                                           | 0.2 | 0.0   | 5.4  | 9                               |                                 |                               |                               |               |            |  |  |

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Master Drainage Map 3 of 3:  
Drainage Area Map  
Street, Stormwater, Master Drainage Plans for:  
Napa Valley 5th Plat  
Lee's Summit, Jackson County, Missouri

STATE OF MISSOURI

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

REVISIONS

11/4/2022 As-Built

C.202