CARAMELLA RANCH ESTATES STORM DRAIN AND CHANNEL MAINTENANCE (DRAFT)

General Information

This section of the manual has been developed for Caramella Ranch Estates for the Operation and Maintenance of the drainage facilities that will be maintained by the Damonte Ranch Drainage District, the drainage facilities that will be maintained by the Caramella Ranch Landscape Maintenance Association and the drainage facilities that will be maintained by the City of Reno. The overall Caramella Ranch Estates is a 290 acre Master Planned Community located within the Damonte Ranch development. Western Skies Drive runs from northeast to southwest through the middle of Caramella Ranch Estates. There are three private villages within Caramella Ranch Estates, which are the Estates Village on the south side of Western Skies Drive, the Conventional Village on the northeast side of Western Skies Drive and the Regency Village on the northwest side of Western Skies Drive.

1.0 Damonte Ranch Drainage District Facilities

1.1 Responsibilities for Drainage Maintenance

All major drainage channels and reinforced concrete boxes (RCB) and all storm drains, manholes, and drop inlets along Arenzano Lane and the western boundary of the project are to be maintained by the Damonte Ranch Drainage District (DRDD). DRDD staff are responsible for tracking inspections of these drainage facilities and for scheduling maintenance and repair work by the DRDD maintenance crews. The Caramella Ranch Estates drainage facilities that will be maintained by the DRDD have been shown on Exhibit 1.0. Drainage facilities within the Caramella Ranch Estates Master Planned Community that will be maintained by the DRDD include:

> The major drainage channel along the southern boundary of the project as well as the major drainage channel which parallels Banta Avenue and then heads north from the roundabout at Western Skies Drive and Banta Avenue to the northern boundary of the project.
>
> All storm drain, manholes and drop inlets beginning at the major drainage channel inlets at the western project terminus of Wester Skies Drive and then heading north along Arenzano Lane and the western boundary of the project.
>
> The storm drain infrastructure that conveys the major drainage channel flows under the roundabout at Western Skies Drive and Banta Avenue.

Individual site inspections will be conducted in response to citizen complaints and/or drainage service requests. When an inspection identifies the need to maintain, repair, or clean the storm drainage facilities, that work shall be scheduled and performed according to the priority assigned to the work.

1.2 Inspection Frequency

All drainage facilities are to be inspected at least once a year. Additionally, all drainage facilities are to be inspected after a major storm that could adversely impact the drainage system (5yr/24hr, or greater storm event).

1.3 Inspection Criteria

The inspection of storm drainage facilities will consist of a detailed evaluation of the existing condition of each of the components of the system. The following inspection items are typical of most facilities.

a. Note the condition of the side slopes and bottom of channels with emphasis on the amount of erosion or sediment present;
b. Note the condition of inlet and outlet structures, grade control structures and riprap;
c. Note the condition of any additional erosive protection measures and any unnatural erosion or vandalism;
d. Note the presence of sediment, debris, trash or rubbish that could obstruct the free flow of storm runoff; and
e. Note the condition of catch basins and manholes.

Inspections shall be scheduled and tracked by DRDD operations staff. The information collected from these inspections shall be used to generate appropriate work orders.

1.4 Prioritization of Maintenance and Repair

All storm drainage maintenance and repair work will be prioritized. Major watersheds drainage systems will have top priority, especially ones that affect greater portions of the DRDD. Work orders for maintenance and repair work generated by inspections will be carried out by drainage maintenance personnel, or private contractors hired by DRDD, as early as practical. The drainage maintenance crews will perform the highest priority assignments first, and then make their way down the list according to the priorities and completion dates assigned to the remaining work.

Emergency work will be given the highest priority (where life/safety issues are involved) and will commence as soon as manpower and equipment are available. The next highest priority will be given to removing obstructions to storm flows and addressing threats to property damage and should be completed within 1 to 2 weeks. Routine preventative maintenance will be given lowest priority and will be completed within 6 months. Routine work may include, but is not limited to, removal of sediment and debris; spraying, trimming or removing vegetation; and minor repairs to earthen slopes.

1.5 Maintenance Procedures

Typical procedures for the maintenance and repair of public storm drainage facilities are as follows:

Removal of Sediment & Debris:

Removal of sediment and debris will consist of excavation and transport of excavated material to an approved off-site land fill, stockpile, or disposal site.

Monuments or markers may be installed within basins and channels to assist operators in locating the bottom limits of the excavation. Potentially submerged structures may be marked with a staff gauge to prevent damage by heavy equipment.

Excavation and removal of sediment material from the basin or channel bottom will be to the original lines and grades indicated on the as-built drawings for these facilities, or to the depth indicated by the monuments or markers,

Operators must use caution to avoid undercutting existing rip-rap or concrete slope protection when excavating near or around the toe of protected slopes.

Repair of Erosion:

Remove loose material, repair and stabilize eroded surfaces, using mechanical compaction.

Remove slide material and rebuild failed slopes with suitable fill material, keying compacted material into the slope.

Replace any soil removed by burrowing rodents, using mechanical compaction. Consider removing burrowing animals from sensitive areas.

Re-establish vegetation. Repair of Rock Rip-Rap Slope Protection:

Remove rock from undermined and/or eroded areas; pull back geotextile filter fabric (where present); fill scoured areas; re-compact material supporting the rock rip-rap; replace geotextile fabric and rip-rap.

Cleaning & Maintenance of Pipes, Drainage Inlets & Manholes:

Remove and dispose of sand, silt, trash and debris to approved disposal locations.

Clean and flush storm drain inlets and pipe lines by use of water hose and heavy duty vacuum by rodding the lines. All material removed from the storm drain system shall be hauled to an approved disposal area.

All drainage facilities that have been damaged will be repaired to design or replaced.

All storm drains are to be cleaned and maintained in accordance with the best management practices (BMPs) adopted as a part of the Storm Water Management Plan (SWMPs) for the DRDD.

Cleaning & Maintenance of Streams, Open Channels & Ditches:

Sand, silt, trash and debris, and any other restrictions to the flow of water will be removed, including excess vegetation.

Vegetation will be removed by trimming or cutting, and *not* by excavating. Pruning, trimming or removal of mature vegetation will be at the direction of a trained arborist. Mowing of native grasses and weeds will be by use of mechanical devices, such as lawn mowers and brush mowers.

All material removed will be hauled away from the site to an approved land fill or stock pile area, including all grass clippings and cuttings from trees and shrubs.

All streams, channels, and ditches in the urbanized portion of Caramella Ranch Estates are to be cleaned and maintained in accordance with the best management practices (BMPs) adopted as a part of the Storm Water Management Plan (SWMP), including the frequency of cleaning and measurable goals established for this activity.

2.0 Individual Village Facilities

2.1 Responsibilities for Drainage Maintenance

All storm drain, manholes and drop inlets, onsite drainage swales, ditches, sidewalk underdrains, and grading in easements located within each of the three Villages are to be maintained by the Caramella Ranch Landscape Maintenance Association (LMA). The LMA staff are responsible for tracking inspections of those drainage facilities and for scheduling maintenance and repair work by maintenance crews. The Caramella Ranch Estates drainage facilities that will be maintained by the LMA have been shown on Exhibits 1.1, 1.2, and 1.3A, and 1.3B. Drainage facilities include storm drain, manholes and drop inlets within the private streets of each Village along with the drainage ditches within common elements that drain the open areas between lots, drainage ditches along the village boundary, and sidewalk underdrains. Individual lot drainage for the private residences are not considered LMA maintained facilities and are to be maintained by the homeowner.

Individual site inspections will be conducted in response to citizen complaints and/or drainage service requests. When an inspection identifies the need to maintain, repair, or clean the storm drainage facilities, that work shall be scheduled and performed according to the priority assigned to the work.

2.2 Inspection Frequency

All drainage facilities are to be inspected at least once a year. Additionally, all drainage facilities are to be inspected after a major storm that could adversely impact the drainage system (5yr/24hr, or greater storm event).

2.3 Inspection Criteria

The inspection of the drainage facilities will consist of a detailed evaluation of the existing condition of each of the components of the system. The following inspection items are typical of the village drainage facilities.

a. Note the condition of the side slopes and bottom of channels with emphasis on the amount of erosion or sediment present;
b. Note the condition of inlet and outlet structures, grade control structures and riprap;
c. Note the condition of any additional erosive protection measures and any unnatural erosion or vandalism;
d. Note the presence of sediment, debris, trash or rubbish that could obstruct the free flow of storm runoff; and
e. Note the condition of catch basins and manholes.

Inspections shall be scheduled and tracked by the LMA operations staff. The information collected from these inspections shall be used to generate appropriate work orders.

2.4 Prioritization of Maintenance and Repair

All drainage maintenance and repair work will be prioritized. Major watersheds drainage system will have top priority, especially ones that affect greater portions of the community. Work orders for maintenance and repair work generated by inspections will be carried out by drainage maintenance personnel, or private contractors hired by the village HOA, as early as practical. The drainage maintenance crews will perform the highest priority assignments first, and then make their way down the list according to the priorities and completion dates assigned to the remaining work.

Emergency work will be given the highest priority (where life/safety issues are involved) and will commence as soon as manpower and equipment are available. The next highest priority will be given to removing obstructions to storm flows and addressing threats to property damage and should be completed within 1 to 2 weeks. Routine preventative maintenance will be given lowest priority and will be completed within

6 months. Routine work may include, but is not limited to, removal of sediment and debris; spraying, trimming or removing vegetation; and minor repairs to earthen slopes.

2.5 Maintenance Procedures

Typical procedures for the maintenance and repair of the private drainage facilities are as follows:

Cleaning & Maintenance Underdrains & Ditches:

Sand, silt, trash and debris, and any other restrictions to the flow of water will be removed, including excess vegetation.

Vegetation will be removed by trimming or cutting, and *not* by excavating. Pruning, trimming or removal of mature vegetation will be at the direction of a trained arborist. Mowing of native grasses and weeds will be by use of mechanical devices, such as lawn mowers and brush mowers.

All material removed will be hauled away from the site to an approved land fill or stock pile area, including all grass clippings and cuttings from trees and shrubs.

Removal of Sediment & Debris:

Removal of sediment and debris will consist of excavation and transport of excavated material to an approved off-site land fill, stockpile, or disposal site.

Monuments or markers may be installed within basins and channels to assist operators in locating the bottom limits of the excavation. Potentially submerged structures may be marked with a staff gauge to prevent damage by heavy equipment.

Excavation and removal of sediment material from the basin or channel bottom will be to the original lines and grades indicated on the as-built drawings for these facilities, or to the depth indicated by the monuments or markers,

Operators must use caution to avoid undercutting existing rip-rap or concrete slope protection when excavating near or around the toe of protected slopes.

Repair of Erosion:

Remove loose material, repair and stabilize eroded surfaces, using mechanical compaction.

Remove slide material and rebuild failed slopes with suitable fill material, keying compacted material into the slope.

Replace any soil removed by burrowing rodents, using mechanical compaction. Consider removing burrowing animals from sensitive areas.

Re-establish vegetation. Repair of Rock Rip-Rap Slope Protection:

Remove rock from undermined and/or eroded areas; pull back geotextile filter fabric (where present); fill scoured areas; re-compact material supporting the rock rip-rap; replace geotextile fabric and rip-rap.

Cleaning & Maintenance of Pipes, Drainage Inlets & Manholes:

Remove and dispose of sand, silt, trash and debris to approved disposal locations.

Clean and flush storm drain inlets and pipe lines by use of water hose and heavy duty vacuum by rodding the lines. All material removed from the storm drain system shall be hauled to an approved disposal area.

All drainage facilities that have been damaged will be repaired to design or replaced.

All storm drains are to be cleaned and maintained in accordance with the best management practices (BMPs) adopted as a part of the Storm Water Management Plan (SWMPs) for the DRDD.

Cleaning & Maintenance of Streams, Open Channels & Ditches:

Sand, silt, trash and debris, and any other restrictions to the flow of water will be removed, including excess vegetation.

Vegetation will be removed by trimming or cutting, and *not* by excavating. Pruning, trimming or removal of mature vegetation will be at the direction of a trained arborist. Mowing of native grasses and weeds will be by use of mechanical devices, such as lawn mowers and brush mowers.

All material removed will be hauled away from the site to an approved land fill or stock pile area, including all grass clippings and cuttings from trees and shrubs.

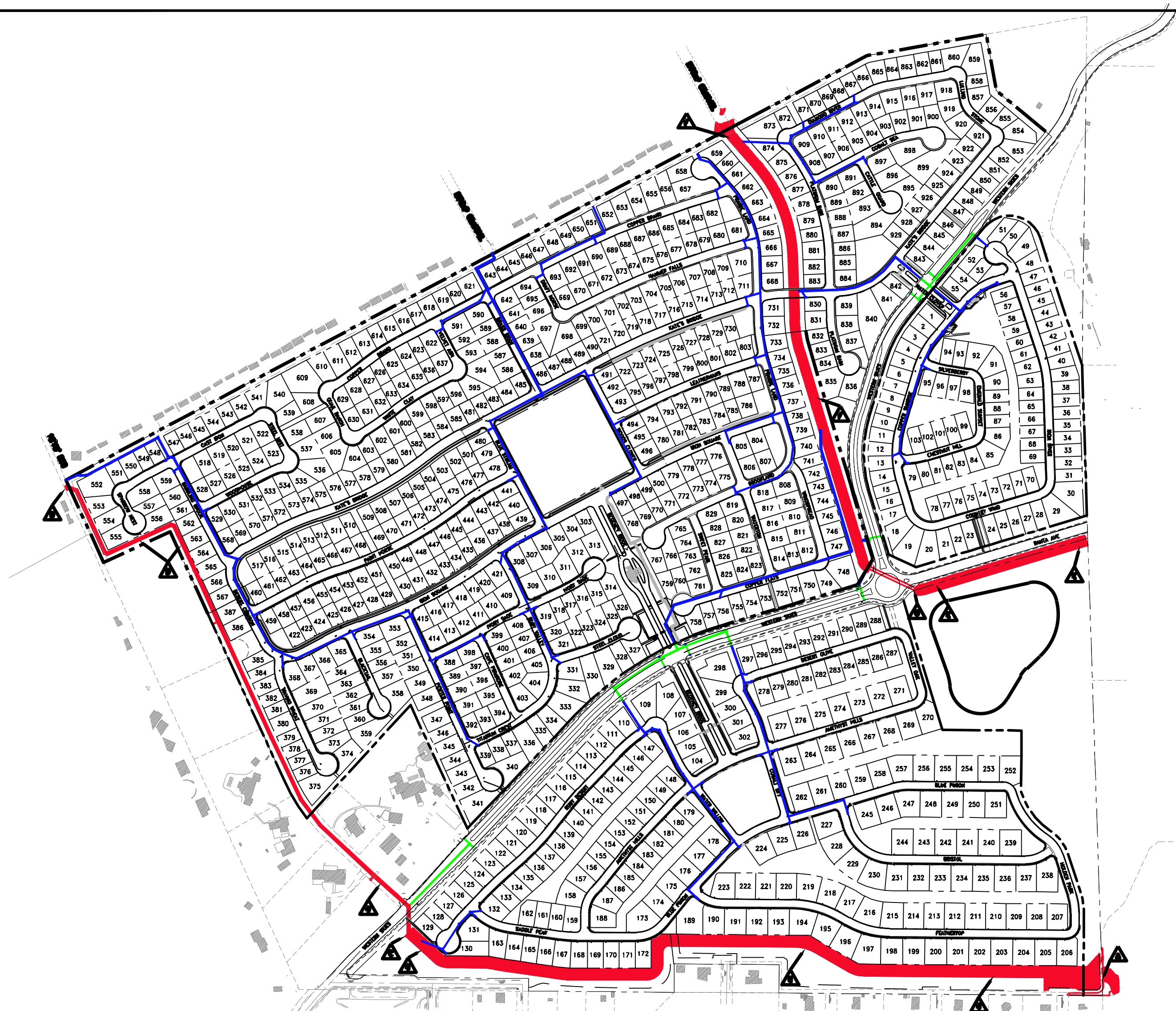
All streams, channels, and ditches in the urbanized portion of Caramella Ranch Estates are to be cleaned and maintained in accordance with the best management practices (BMPs) adopted as a part of the Storm Water Management Plan (SWMP), including the frequency of cleaning and measurable goals established for this activity.

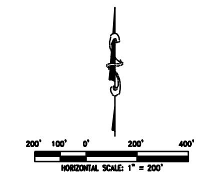
3.0 Western Skies Drive

2.1 Responsibilities for Drainage Maintenance

All storm drain, manholes and drop inlets located within the right-of-way of Western Skies Drive will be maintained by the City of Reno Public Works Department. The inspection and maintenance of these facilities will be in accordance with methodology and operations already in place with the Public Works Department.

Note that these inspection and maintenance obligations do not apply to the storm drainage infrastructure located under the roundabout at Western Skies Drive and Banta Avenue which convey flows between major drainage channels. As explained previously in this document, the inspection and maintenance of those facilities are the responsibility of the Damonte Ranch Drainage District.





LEGEND

- STORM DRAIN, MANHOLES AND DROP INLETS TO BE MAINTAINED

  SEE FIGURES 1.1, 1.2, 1.3A AND 1.3B FOR MORE DETAILED STORM DRAIN EXHIBITS FOR THE ESTATES, CONVENTIONAL AND REGENCY VILLAGES
- MAINTENANCE ACCESS ROAD
- 41' WIDE RIPRAP CHANNEL W/ GABION DROP STRUCTURES
- CONCRETE HEADWALL FOR DUAL 60" HDPE STORM DRAIN
- DUAL 60" HDPE STORM DRAIN AND MANHOLES
- 44' WIDE RIPRAP CHANNEL W/ GABION DROP STRUCTURES
- 39' WIDE RIPRAP CHANNEL
- 12'X5' RCB W CONCRETE HEADWALLS

CARAMELLA RANCH ESTATES
TOLL BROTHERS

EXHIBIT 1.0
MASTER DRAINAGE OPERATIONS AND MAINTENANCE EXHIBIT FOR DRDD FACILITIES

RCI Engineering
6490 S. McCARRAN BLVD, BLDG E SUITE 115
RENO, NEVADA 89509
PH#702.453.0800 FAX#702.453.0801

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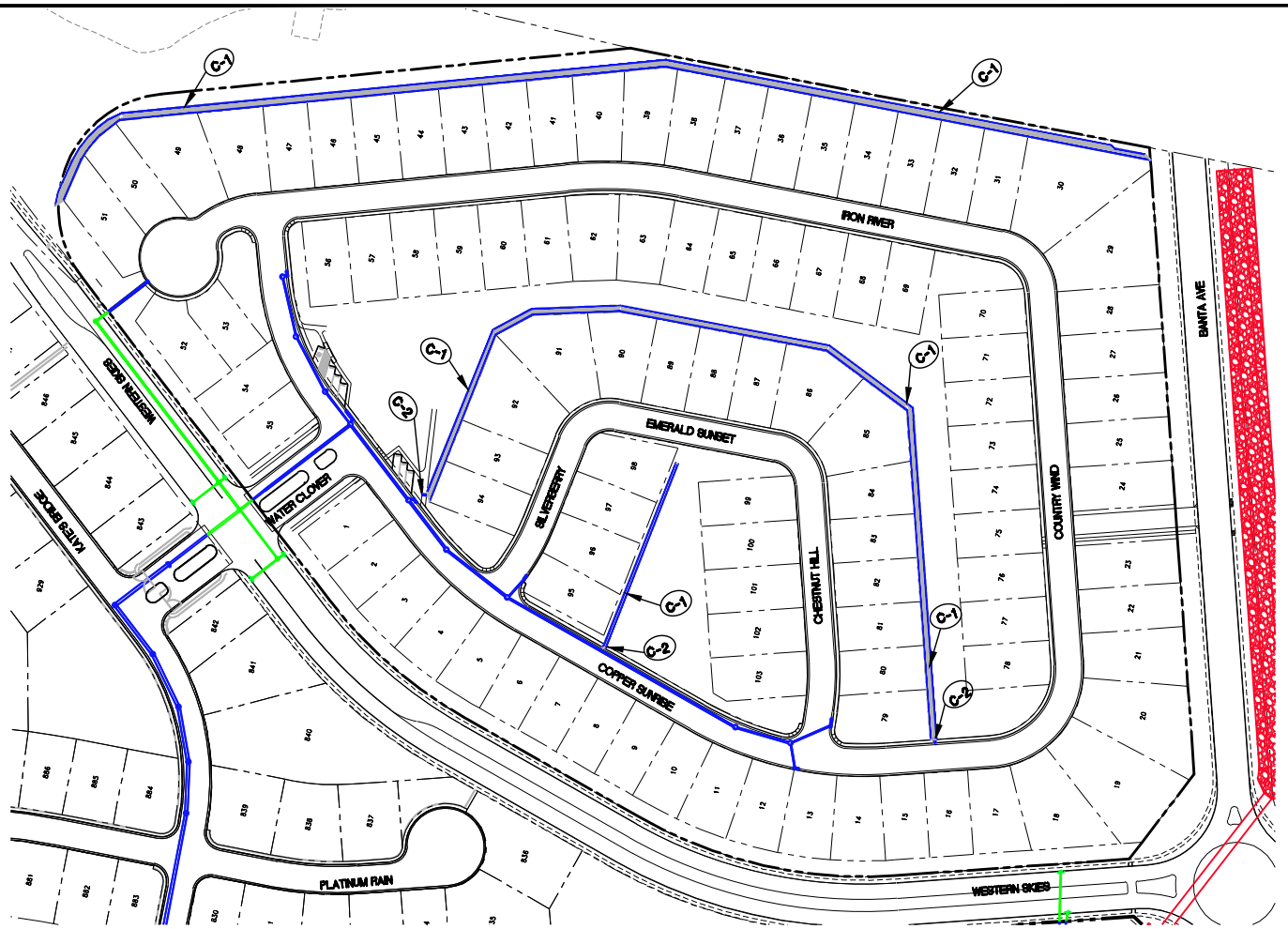

CARAMELLA RANCH ESTATES
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CONVENTIONAL VILLAGE DRAINAGE OPERATION AND MAINTENANCE PLAN
EXHIBIT 1.1

RCI Engineering
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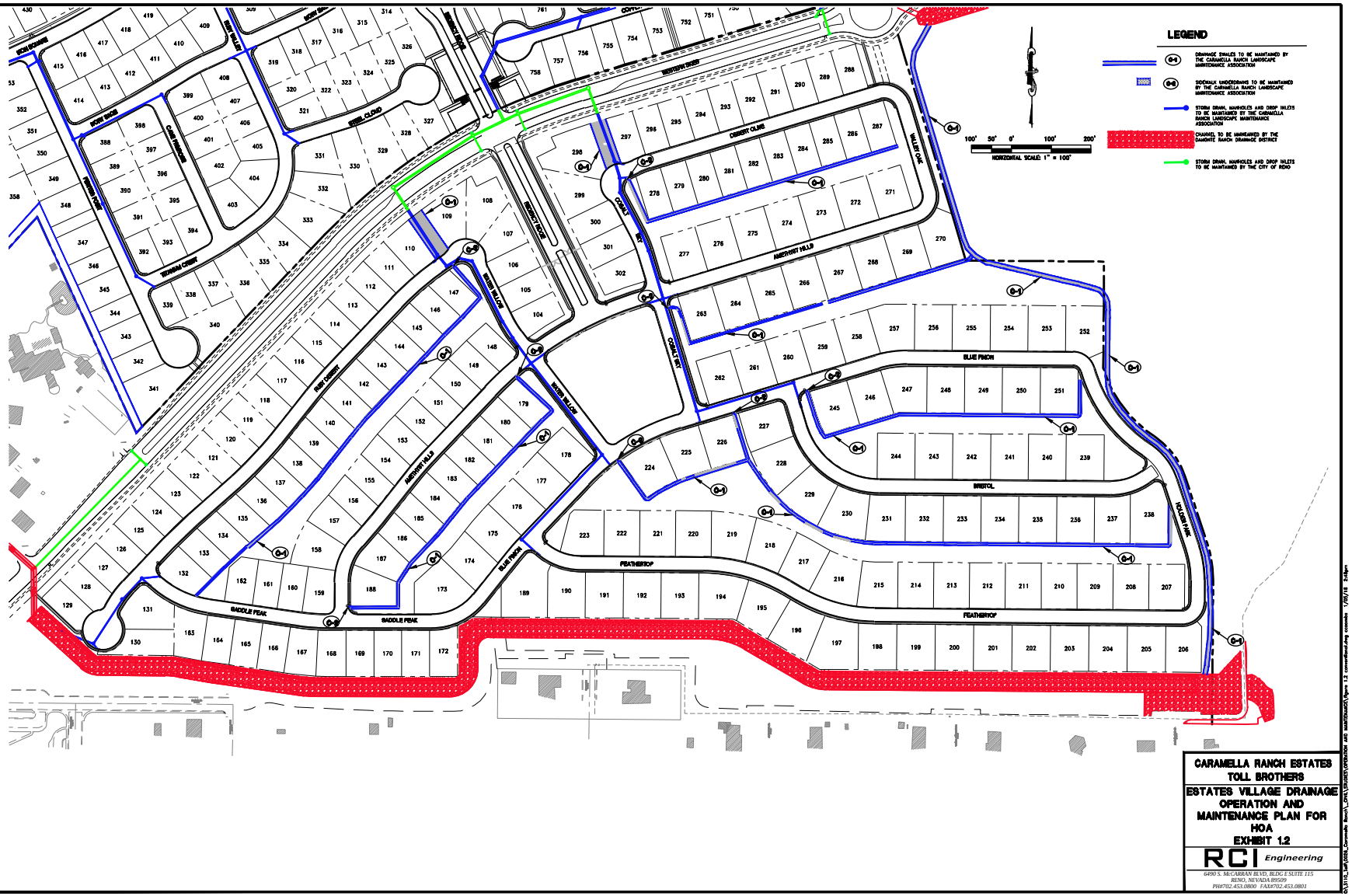
LEGEND
DRAINAGE SWALES TO BE MAINTAINED BY THE CARAMELLA RANCH LANDSCAPE MAINTENANCE ASSOCIATION
SIDEWALK UNDERDRAINS TO BE MAINTAINED BY THE CARAMELLA RANCH LANDSCAPE MAINTENANCE ASSOCIATION
STORM DRAIN, MANHOLES AND DROP INLETS TO BE MAINTAINED BY THE CARAMELLA RANCH LANDSCAPE MAINTENANCE ASSOCIATION
CHANNEL TO BE MAINTAINED BY THE DIAMONTE RANCH DRAINAGE DISTRICT
STORM DRAIN, MANHOLES AND DROP INLETS TO BE MAINTAINED BY THE CITY OF RENO
100' 50' 0' 100' 200'
HORIZONTAL SCALE: 1" = 100'
CARAMELLA RANCH ESTATES
TOLL BROTHERS
ESTATES VILLAGE DRAINAGE OPERATION AND MAINTENANCE PLAN FOR HOA
EXHIBIT 1.2
RCI Engineering
6490 S. McCARRAN BLVD, BLDG E SUITE 115
RENO, NEVADA 89509
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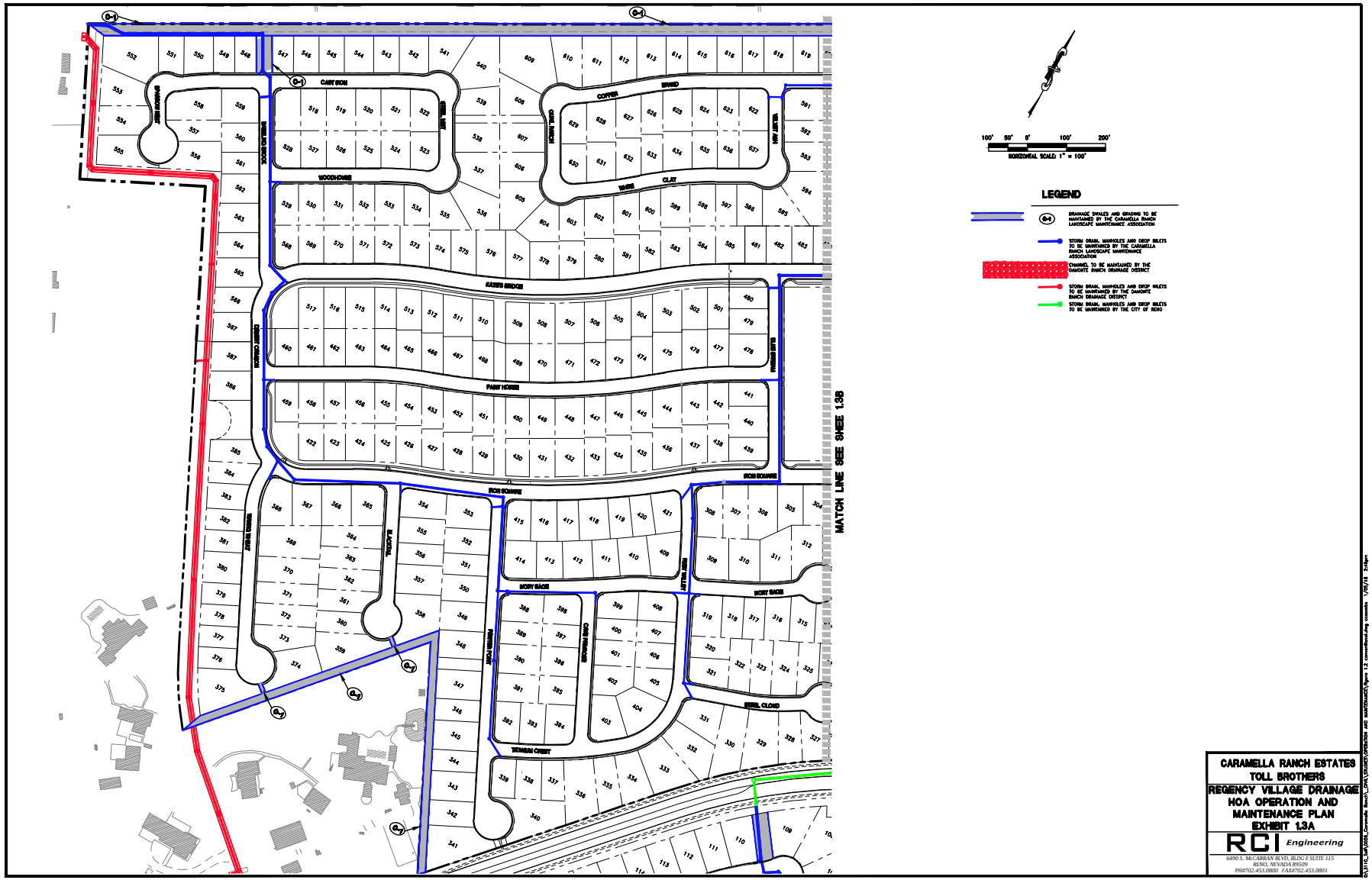

CARAMELLA RANCH ESTATES
TOLL BROTHERS
REGENCY VILLAGE DRAINAGE
HOA OPERATION AND MAINTENANCE PLAN
EXHIBIT 1.3A

RCI Engineering

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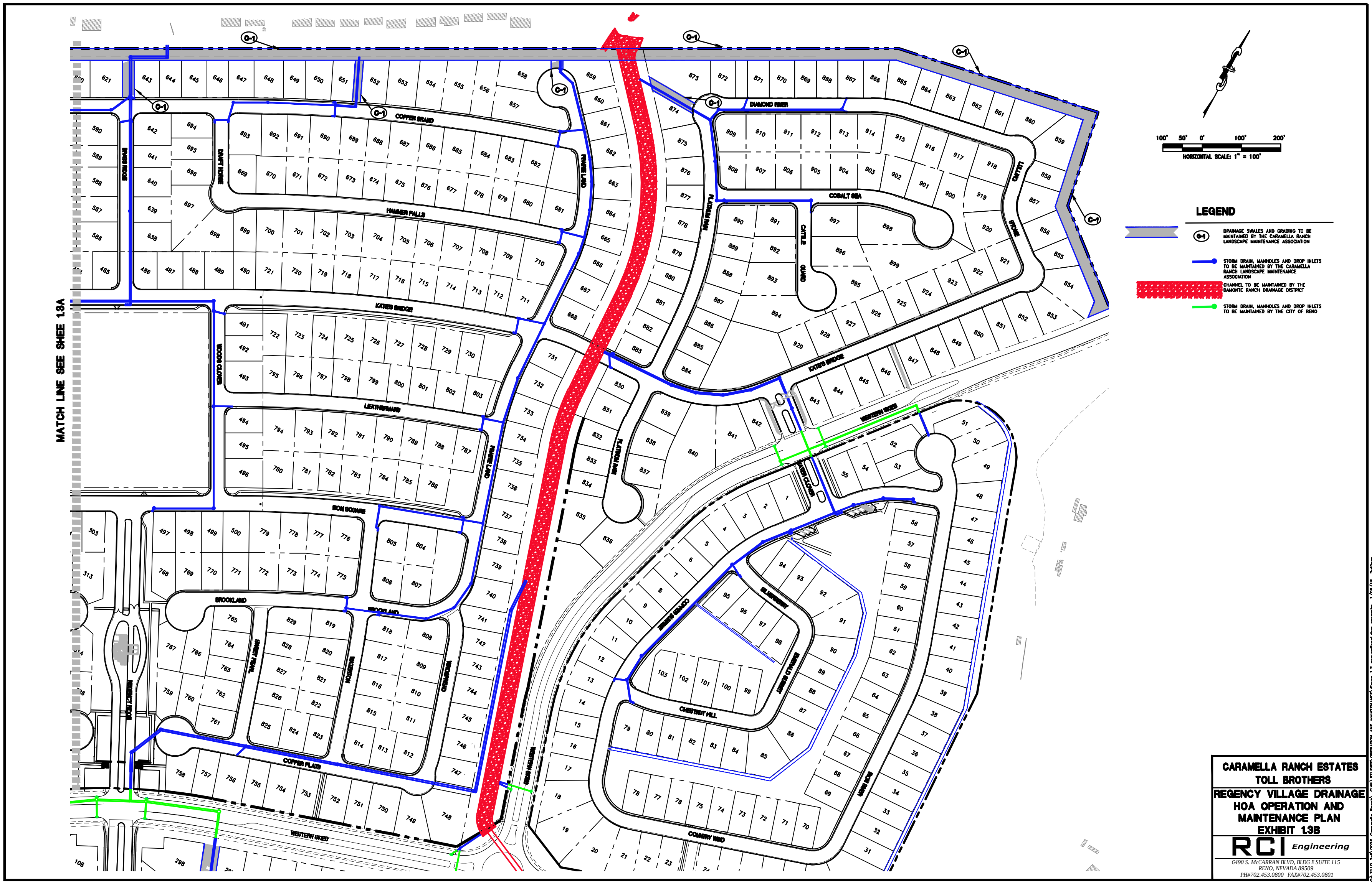
03.31\c_lef\2016_Caramella Ranch_CIVIL\DRAINAGE\DRAINAGE AND MAINTENANCE\Figure 1.2 consolidated.dwg consolidated 1/25/18 2:43pm


MATCH LINE SEE SHEE 1.3A
100' 50' 0' 100' 200'
HORIZONTAL SCALE: 1" = 100'
LEGEND
DRAINAGE SWALES AND GRADING TO BE MAINTAINED BY THE CARAMELLA RANCH LANDSCAPE MAINTENANCE ASSOCIATION
STORM DRAIN, MANHOLES AND DROP INLETS TO BE MAINTAINED BY THE CARAMELLA RANCH LANDSCAPE MAINTENANCE ASSOCIATION
CHANNEL TO BE MAINTAINED BY THE DAMONTE RANCH DRAINAGE DISTRICT
STORM DRAIN, MANHOLES AND DROP INLETS TO BE MAINTAINED BY THE CITY OF RENO
CARAMELLA RANCH ESTATES
TOLL BROTHERS
REGENCY VILLAGE DRAINAGE
HOA OPERATION AND
MAINTENANCE PLAN
EXHIBIT 1.3B
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