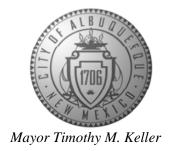
CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director



June 3, 2020

Amit Pathak, PE Bohannan Huston, Inc. 7500 Jefferson St NE Albuquerque, NM 87109

RE: Vista del Norte Park Phase 2

1005 Osuna Blvd. NE

Grading and Drainage Plan Engineer's Stamp Date: 06/02/20

Hydrology File: E16D032

Dear Mr. Pathak:

PO Box 1293 Based upon the information provided in your resubmittal received 06/03/20, the Grading &

Drainage Plan is approved for Grading Permit and Paving Permit.

Albuquerque As a reminder, if the project total area of disturbance (including the staging area and any work

within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the

Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to

any earth disturbance.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

NM 87103

www.cabq.gov

Renée C. Brissette, P.E. CFM Senior Engineer, Hydrology

Renée C. Brissette

Planning Department



REC'D BY:

Engineering Spatial Data Advanced Technologies

Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335

www.bhinc.com

voice: 505.823.1000 facsimile: 505.798.7988 toll free: 800.877.5332

CLIENT/COURIER TRANSMITTAL

| То: | Rene Brissette City of Albuquerque Planning Department | Requested by: Date: Time Due: | Racquel Michel 06-02-2020 This A.M. This P.M. |
|------------------------|---|-------------------------------|--|
| Phone: Job No.: | 924-3975 20200216.003.01 | Job Name: | Rush By Tomorrow Vista del Norte Park |
| ☐ Co ☐ Mai ☑ Otl | n er email | Item: | <u> </u> |
| ITEM NO 1 COMMENT | DESCRIPTION 1 Hydrology Re-Submi TS / INSTRUCTIONS | ttal | |
| Attached is t | the resubmittal for Vista del Norte. The grif you have additional comments. | grading was refin | ed and basins modified slightly. Please |

DATE:

TIME:



City of Albuquerque

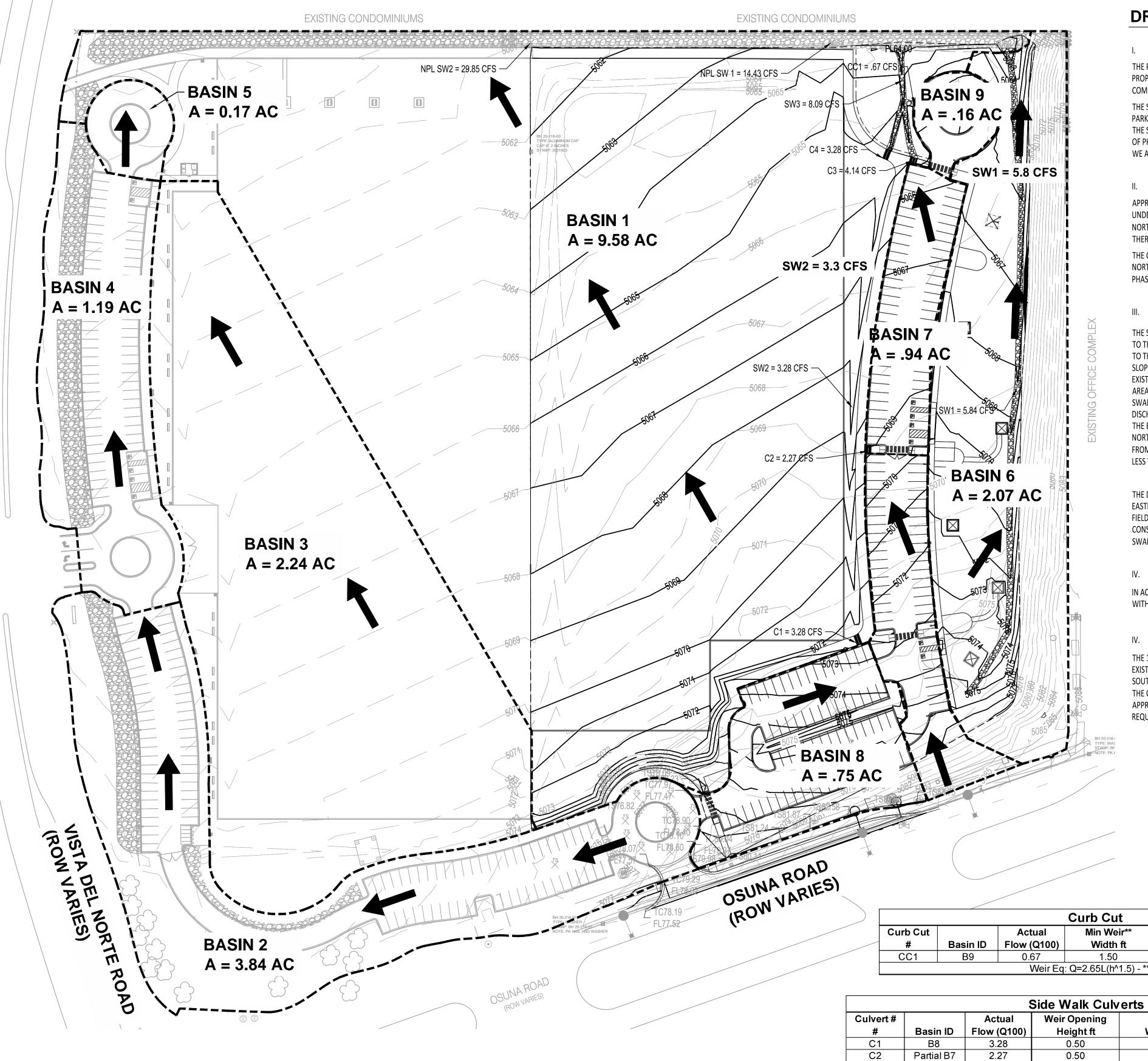
Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

| Project Title: | Building Per | mit #: Hydrology File #: |
|---|--------------|---|
| | | Work Order#: |
| | | |
| City Address: | | |
| | | Contact: |
| Address: | | |
| | | E-mail: |
| Other Contact: | | Contact: |
| Address: | | |
| | | E-mail: |
| TYPE OF DEVELOPMENT: | _PLATRESI | DENCE DRB SITE ADMIN SITE |
| Check all that Apply: | | |
| DEPARTMENT:HYDROLOGY/ DRAINAGETRAFFIC/ TRANSPORTATION | | TYPE OF APPROVAL/ACCEPTANCE SOUGHT: BUILDING PERMIT APPROVAL CERTIFICATE OF OCCUPANCY |
| TYPE OF SUBMITTAL: | TOLTTON | PRELIMINARY PLAT APPROVAL |
| ENGINEER/ARCHITECT CERTIF | ICATION | |
| PAD CERTIFICATION | | SITE PLAN FOR SUB'D APPROVAL SITE PLAN FOR BLDG. PERMIT APPROVAL |
| CONCEPTUAL G & D PLAN | | |
| GRADING PLAN | | FINAL PLAT APPROVAL |
| DRAINAGE REPORT DRAINAGE MASTER PLAN | | SIA/ RELEASE OF FINANCIAL GUARANTEE |
| DRAINAGE MASTER PLAN FLOODPLAIN DEVELOPMENT P | EDMIT ADDLIC | FOUNDATION PERMIT APPROVAL |
| ELEVATION CERTIFICATE | ERMIT APPLIC | GRADING PERMIT APPROVAL |
| CLOMR/LOMR | | SO-19 APPROVAL |
| TRAFFIC CIRCULATION LAYOU | TT (TCI) | PAVING PERMIT APPROVAL |
| TRAFFIC EIRCULATION LATOR TRAFFIC IMPACT STUDY (TIS) | of (ICL) | GRADING/ PAD CERTIFICATION |
| STREET LIGHT LAYOUT | | WORK ORDER APPROVAL |
| | | CLOMR/LOMR |
| OTHER (SPECIFY) PRE-DESIGN MEETING? | | FLOODPLAIN DEVELOPMENT PERMIT |
| FRE-DESIGN MEETING? | | OTHER (SPECIFY) |
| IS THIS A RESUBMITTAL?: Yes | No | OTHER (SPECIFT) |
| DATE SUBMITTED: | By: | |

FEE PAID:__



DRAINAGE MANAGEMENT PLAN

INTRODUCTION

THE PURPOSE OF THIS SUBMITTAL IS TO PRESENT A REVISED GRADING AND DRAINAGE PLAN FOR THE

THE SITE ENCOMPASSES A TOTAL OF 21.14 ACRES, INCLUDING PHASE 1 AND PHASE 2. THE CONSTRUCTION OF PHASE 2 WILL CONSIST OF A LARGE TURF FIELD, PARKING LOTS, AND A DOG PARK. WITH THIS SUBMITTAL WE ARE SEEKING GRADING PERMIT & PAVING PERMIT APPROVAL.

II. EXISTING HYDROLOGIC CONDITIONS

APPROXIMATELY HALF OF THE SITE HAS ALREADY BEEN DEVELOPED (PHASE 1) WHILE PHASE 2 IS CURRENTLY UNDEVELOPED WITH NATIVE VEGETATION COVER. THE SITE DRAINAGE SHEET FLOWS TO THE NORTH/NORTHWEST AT AN AVERAGE SLOPE OF 1.2%. PER THE APPROVED DMP AND SITE INVESTIGATION THERE IS NO OFFSITE FLOWS THAT ENTER THE SITE.

THE OVERALL DRAINAGE PLAN CONVEYS SITE DRAINAGE VIA SURFACE FLOW TO THE EXISTING VISTA DEL NORTE STORM DRAIN SYSTEM. THE DISCHARGE FROM THE SITE CURRENTLY TOTALS 59.4 CFS. PER THE PHASE 1 DMP (E16-D032) THE ALLOWABLE DISCHARGE IS 81.45 CFS FROM THE PARK SITE.

PROPOSED HYDROLOGIC CONDITIONS

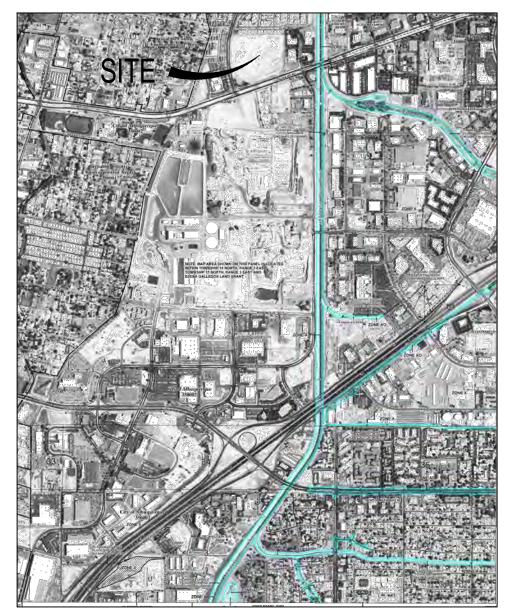
THE SITE IS DIVIDED INTO 8 DRAINAGE BASINS. BASIN 1 IS THE MAJORITY OF THE TURF AREA AND DRAINS TO THE NORTH PROPERTY LINE SWALE. BASINS 2, 3, 4, AND 5 ARE EXISTING INFRASTRUCTURE AND DRAIN THE EXISTING NORTH PROPERTY LINE SWALE AS WELL. BASIN 9 CONSISTS OF THE ROUNDABOUT ON THE NORTHEAST CORNER OF THE SITE AND DISCHARGES TO THE NORTH PROPERTY LINE SWALE. DISCHARGE FROM THE SITE FULLY DEVELOPED WILL TOTAL 62.81 CFS (SEE BASIN DATA TABLE, THIS SHEET) WHICH IS LESS THAN THE ALLOWABLE 81.54 CFS.

THE DRAINAGE DIVERSION BERM CONSTRUCTED WITH PHASE ONE TO MITIGATE THE FLOW FROM THE FIELD WILL MATCH EXISTING GRADES FROM THE WESTERN FIELD. THE NORTH PROPERTY LINE SWALE WAS CONSTRUCTED IN THE PHASE TWO AREA ALREADY AND IS WIDER THAN AS DESIGNED WITH PHASE 1. THE SWALE SAFELY CONVEYS THE 29.85 CFS FROM BASINS 1, 6 THRU 9. (SEE TABLE THIS SHEET).

IV. FLOODPLAIN:

IN ACCORDANCE WITH FEMA COMMUNITY MAP PANEL #35001C0138H, DATED 08-16-2012, THE SITE IS NOT WITHIN THE FLOODPLAIN.

THE 100YR-6HR PEAK DISCHARGE FROM THE SITE WILL BE SAFELY ROUTED THROUGH A SWALE TO THE SOUTHERN DETENTION POND. THESE FLOWS WERE COMPUTED IN ACCORDANCE WITH SECTION 22.2 OF THE COA DEVELOPMENT PROCESS MANUAL (DPM). THIS DRAINAGE MANAGEMENT PLAN PROVIDES FOR AN APPROACH WHICH WILL SAFELY MANAGE FLOW FROM A 100YR-6HR STORM EVENT AND MEETS CITY REQUIREMENTS.



FEMA FIRM MAP # 35001C0138H

Design Review Committee

City Project No.

LEGEND EXISTING INDEX CONTOUR EXISTING INTERMEDIATE CONTOUR PROPOSED INDEX CONTOUR PROPOSED INTERMEDIATE CONTOUR DIRECTION OF FLOW DRAINAGE BASIN BOUNDARY BASIN ID BASIN 1 www.bhinc.com CITY OF ALBUQUERQUE PARKS & RECREATION DEPARTMENT STRATEGIC PLANNING & DESIGN DIVISION VISTA DEL NORTE PARK - PHASE 4 DRAINAGE MANAGEMENT PLAN

City Engineer Approval

Zone Map No.

E-16

Mo./Day/Yr.

C-001

| Curb Cut | | | | | | | |
|---|----------|-------------|----------|-----------|------|--|--|
| Curb Cut Actual Min Weir** Weir Weir Capacity | | | | | | | |
| # | Basin ID | Flow (Q100) | Width ft | Height ft | CFS | | |
| CC1 | B9 | 0.67 | 1.50 | 0.50 | 1.41 | | |
| Weir Eq: Q=2.65L(h^1.5) - ** | | | | | | | |

| | | 5 | Side Walk Culv | erts | | |
|---------------|------------|-----------------------|---------------------------|-------------------|------------------|-----------|
| Culvert# # | Basin ID | Actual Flow (Q100) | Weir Opening Height ft | Total Width ft | Minimum Slope | Capacity* |
| C1 | B8 | 3.28 | 0.50 | 4.00 | 1.43% | 3.75 |
| C2 | Partial B7 | 2.27 | 0.50 | 3.00 | 1.00% | 2.81 |
| C3 | B7 | 4.14 | 0.50 | 5.00 | 2.00% | 4.68 |
| C4 | B8 | 3.28 | 0.50 | 4.00 | 2.00% | 3.75 |
| | | V | /eir Eq: Q=2.65L(h^^ | 1.5) - ** | | |

| Proj | Proposed Ultimate Development Conditions Basin Data Table | | | | | | | | |
|---------|---|------------|-------------|-------|------------------|----------------------|----------|----------------------|------------------------|
| the DPM | Section 22.2, | Zone: | 2 | | | | | | |
| Area | Lan | d Treatmei | nt Percenta | iges | Q (100yr) | Q (100yr-6hr) | WTE | V (100yr-6hr) | V (100yr-10day) |
| (AC.) | Α | В | С | D | (cfs/ac.) | (CFS) | (inches) | (CF) | CF |
| 9.79 | 0.0% | 85.0% | 10.0% | 5.0% | 2.49 | 24.36 | 0.88 | 31357 | 34201 |
| 3.84 | 0.0% | 85.0% | 10.0% | 5.0% | 2.49 | 9.55 | 0.88 | 12295 | 13411 |
| 2.24 | 0.0% | 10.0% | 20.0% | 70.0% | 4.15 | 9.27 | 1.79 | 14507 | 23594 |
| 1.19 | 0.0% | 10.0% | 20.0% | 70.0% | 4.15 | 4.95 | 1.79 | 7744 | 12594 |
| 0.17 | 0.0% | 0.0% | 10.0% | 90.0% | 4.54 | 0.76 | 2.02 | 1222 | 2093 |
| 2.07 | 0.0% | 50.0% | 43.0% | 7.0% | 2.82 | 5.84 | 1.02 | 7698 | 8540 |
| 0.94 | 0.0% | 13.0% | 0.0% | 87.0% | 4.39 | 4.14 | 1.95 | 6672 | 11446 |
| 0.75 | 0.0% | 8.0% | 10.0% | 82.0% | 4.35 | 3.28 | 1.91 | 5244 | 8838 |
| 0.16 | 0.0% | 18.0% | 0.0% | 82.0% | 4.26 | 0.67 | 1.88 | 1066 | 1811 |
| 28.08 | _ | - | - | - | 3.52 | 62.81 | 1.49 | 87805 | 116527 |

Vista del Norte Park Phase 2

This table is based on the DPM Section 22.2, Zone:

9.79

3.84

2.24

0.75

ID (SQ. FT) (AC.)

167283

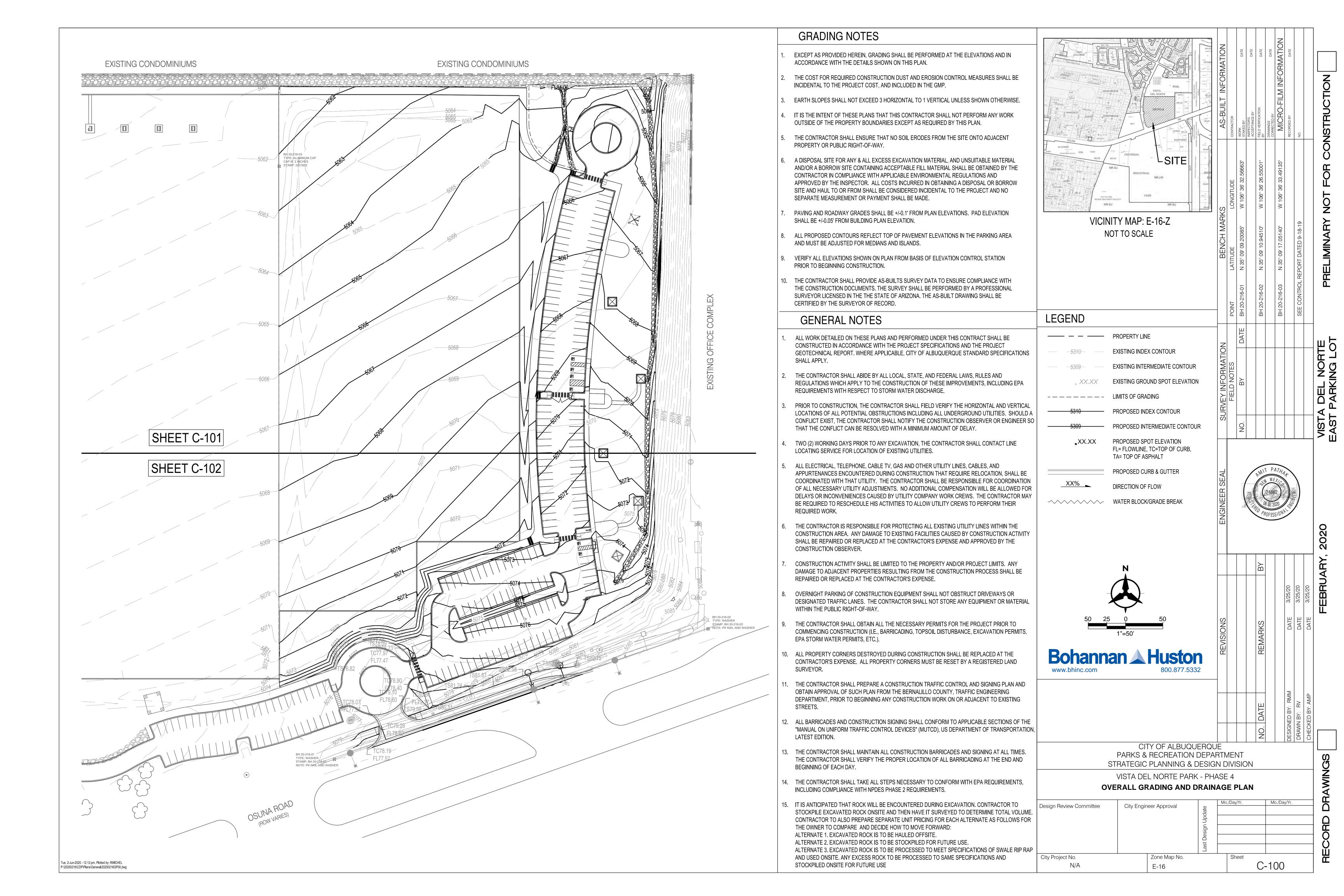
41149 0.94

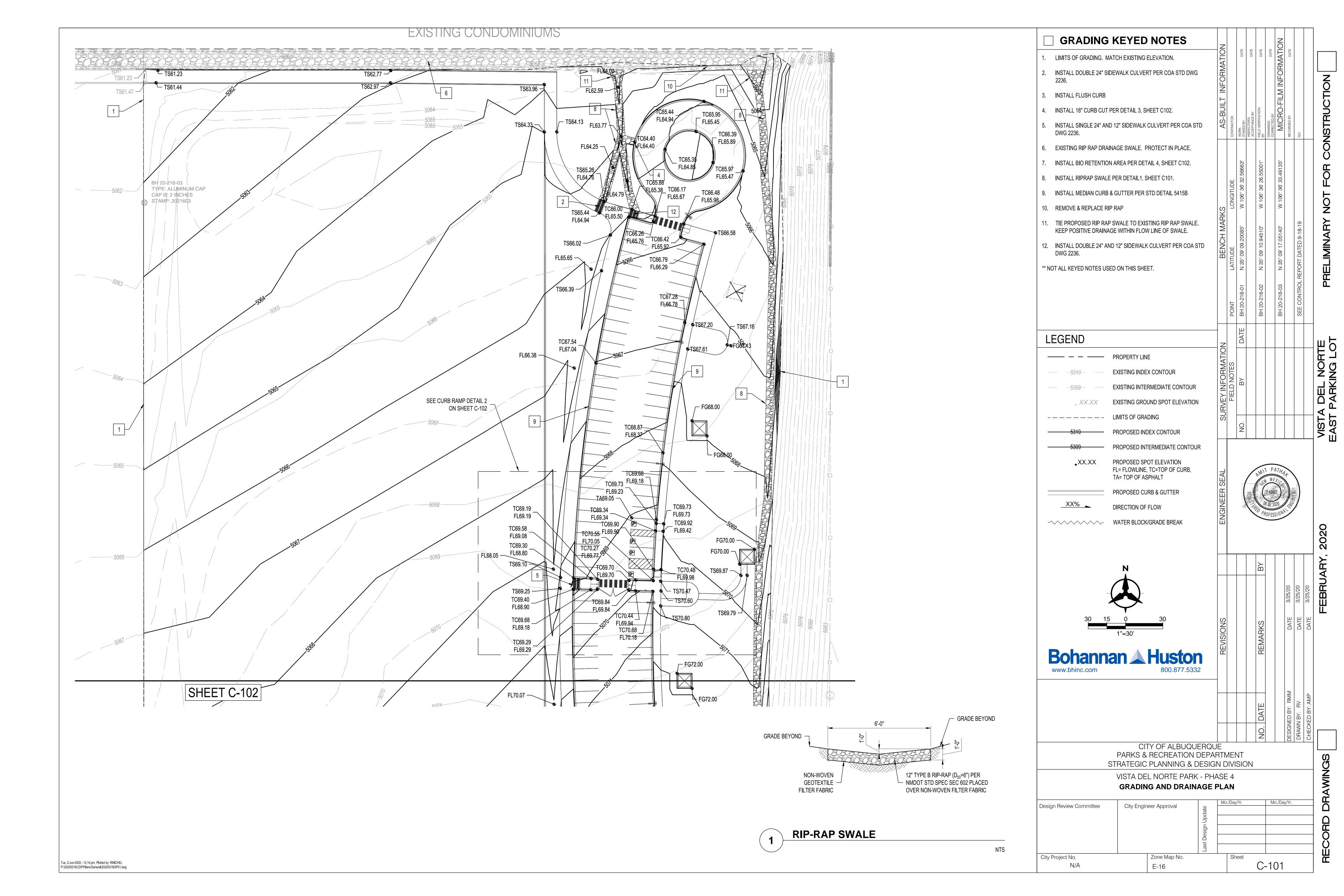
6810 0.16

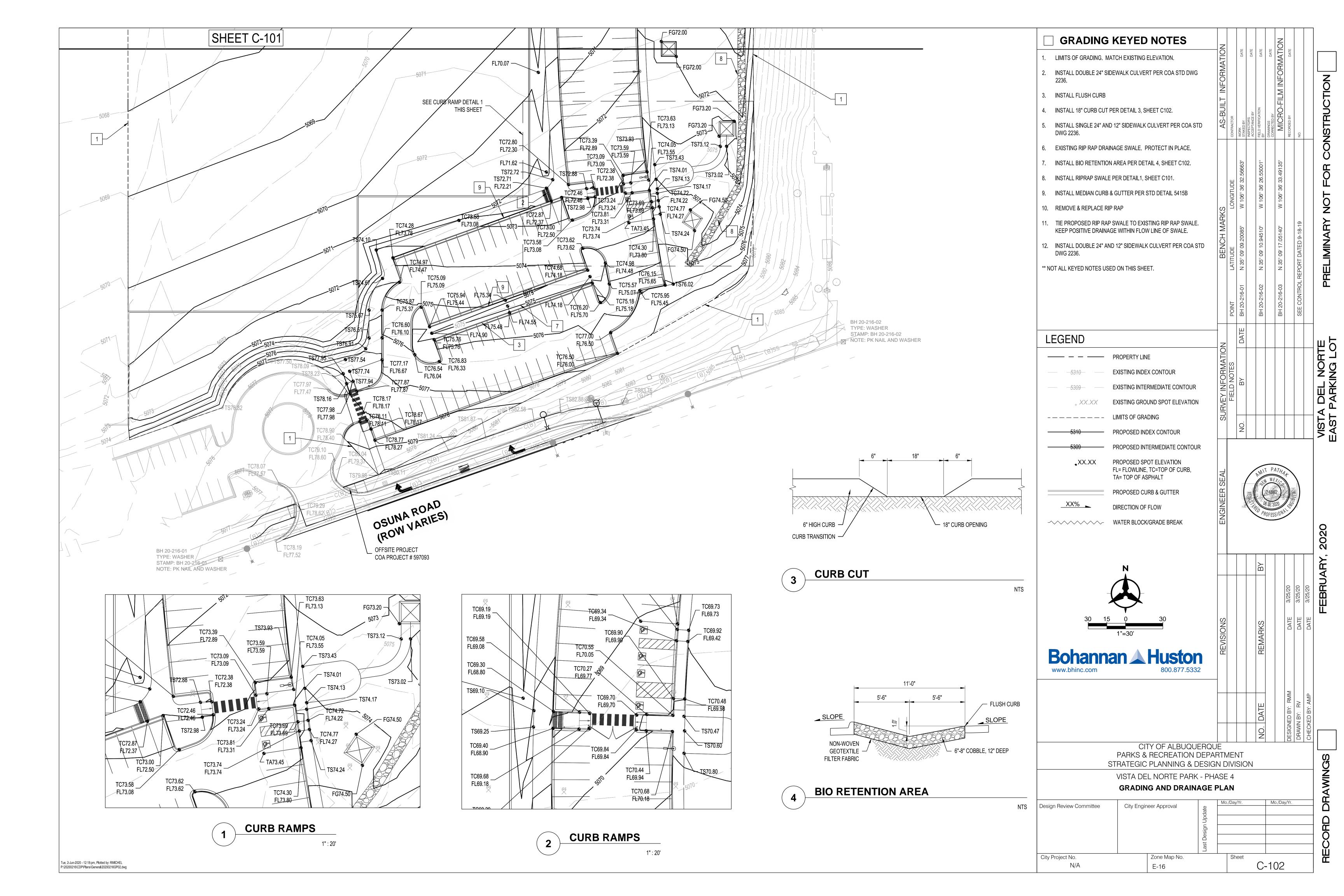
97360

TOTAL 1222964 28.08

| Swale Table | | | | | | | | | |
|-------------|---------------------------------------|--------|----------|----------|----------|-------|---------|-----------|----------|
| Swale | | Actual | Mannings | Bottom | Тор | Depth | Minimum | Capacity* | Velocity |
| # | Basin ID | Flow | N | Width FT | Width FT | FT | Slope | CFS | FPS |
| SW1 | BASIN 6 | 5.84 | 0.035 | 0.0 | 6.00 | 1.00 | 1.10% | 8.12 | 2.46 |
| SW2 | Basin 8 | 3.28 | 0.025 | 0.0 | 12.00 | 1.00 | 0.47% | 15.26 | 1.68 |
| SW3 | BASIN B-7, B-8, B-9 | 8.09 | 0.035 | 0.0 | 6.00 | 1.00 | 2.97% | 13.35 | 3.91 |
| NPL SW1 | B-6, B-7, B-8, B-9, Partial B-1 | 14.43 | 0.035 | 0.0 | 16.00 | 1.50 | 1.30% | 47.37 | 2.88 |
| NPL SW2 | Partial B-1 +EX SW1 | 29.85 | 0.035 | 0.0 | 15.00 | 1.70 | 1.30% | 54.31 | 3.67 |
| | Capacity Based on Manning's Eq * | | | | | | | | |







Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Friday, May 29 2020

<Name>

Triangular

| rriarigaiai | |
|-------------------|--------------|
| Side Slopes (z:1) | = 5.33, 5.33 |
| Total Depth (ft) | = 1.50 |

Invert Elev (ft) = 5000.00 Slope (%) = 1.30 N-Value = 0.035

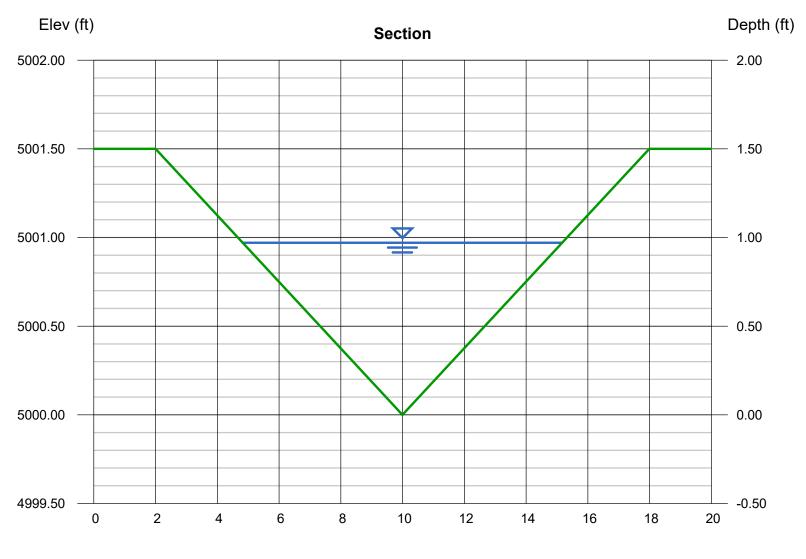
Calculations

Compute by: Known Q Known Q (cfs) = 14.43

| Depth (ft) | = 0.97 |
|-----------------|---------|
| Q (cfs) | = 14.43 |
| Area (sqft) | = 5.01 |
| Valority (ft/a) | - 200 |

Highlighted

Area (sqft) = 5.01
Velocity (ft/s) = 2.88
Wetted Perim (ft) = 10.52
Crit Depth, Yc (ft) = 0.86
Top Width (ft) = 10.34
EGL (ft) = 1.10



Reach (ft)

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Friday, May 29 2020

<Name>

| Triangular | |
|-------------------|--------------|
| Side Slopes (z:1) | = 5.33, 5.33 |

Total Depth (ft) = 1.50

Invert Elev (ft) = 5000.00 Slope (%) = 1.30 N-Value = 0.035

Calculations

Compute by: Q vs Depth

No. Increments = 14

Highlighted Depth (ft)

Depth (ft) = 1.50 Q (cfs) = 47.37 Area (sqft) = 11.99 Velocity (ft/s) = 3.95 Wetted Perim (ft) = 16.27 Crit Depth, Yc (ft) = 1.38

Top Width (ft) = 15.99EGL (ft) = 1.74

Elev (ft) Depth (ft) Section 5002.00 -2.00 5001.50 - 1.50 5001.00 - 1.00 5000.50 -- 0.50 0.00 5000.00 4999.50 -0.50 2 6 0 4 8 10 12 14 16 18 20

Reach (ft)

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Friday, May 29 2020

<Name>

| ı | r | ıa | ngular | |
|---|---|----|--------|--|
| _ | | | | |

Side Slopes (z:1) = 4.40, 4.40Total Depth (ft) = 1.70

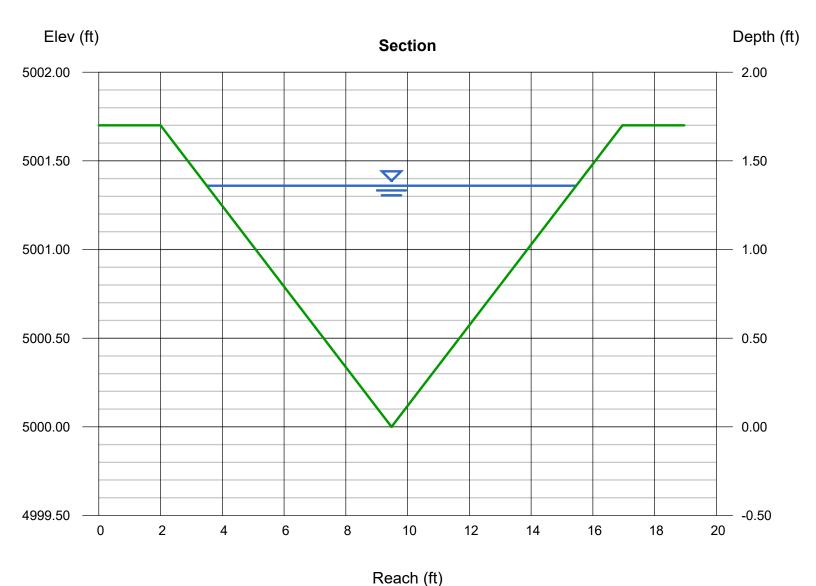
Invert Elev (ft) = 5000.00 Slope (%) = 1.30 N-Value = 0.035

Calculations

Compute by: Known Q Known Q (cfs) = 29.85

Highlighted

= 1.36Depth (ft) Q (cfs) = 29.85Area (sqft) = 8.14 Velocity (ft/s) = 3.67 Wetted Perim (ft) = 12.27Crit Depth, Yc (ft) = 1.24 Top Width (ft) = 11.97EGL (ft) = 1.57



Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Friday, May 29 2020

<Name>

| Triangular | |
|-------------------|--------------|
| Side Slopes (z:1) | = 4.40, 4.40 |
| | |

Total Depth (ft) = 1.70

Invert Elev (ft) = 5000.00 Slope (%) = 1.30 N-Value = 0.035

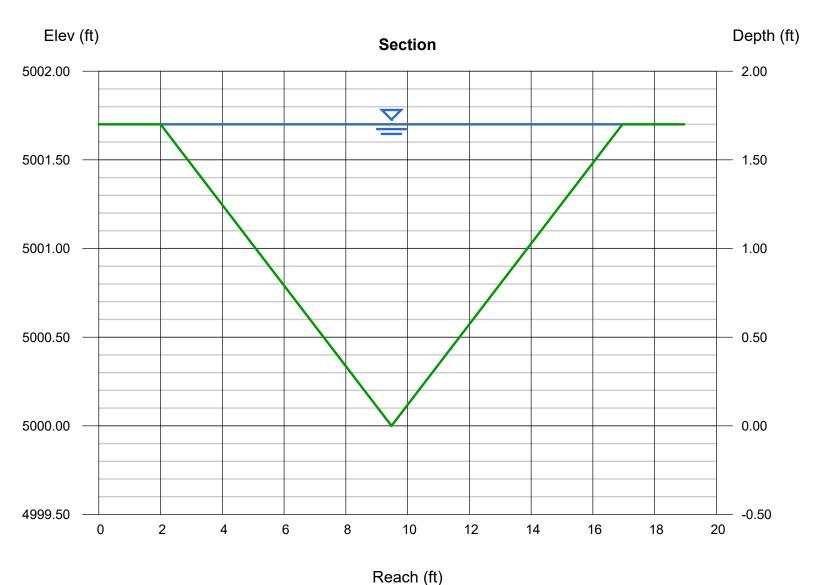
Calculations

Compute by: Q vs Depth

No. Increments = 29

Highlighted

= 1.70 Depth (ft) Q (cfs) = 54.31 = 12.72Area (sqft) Velocity (ft/s) = 4.27 Wetted Perim (ft) = 15.34Crit Depth, Yc (ft) = 1.57 Top Width (ft) = 14.96EGL (ft) = 1.98



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Known Q

= 5.84

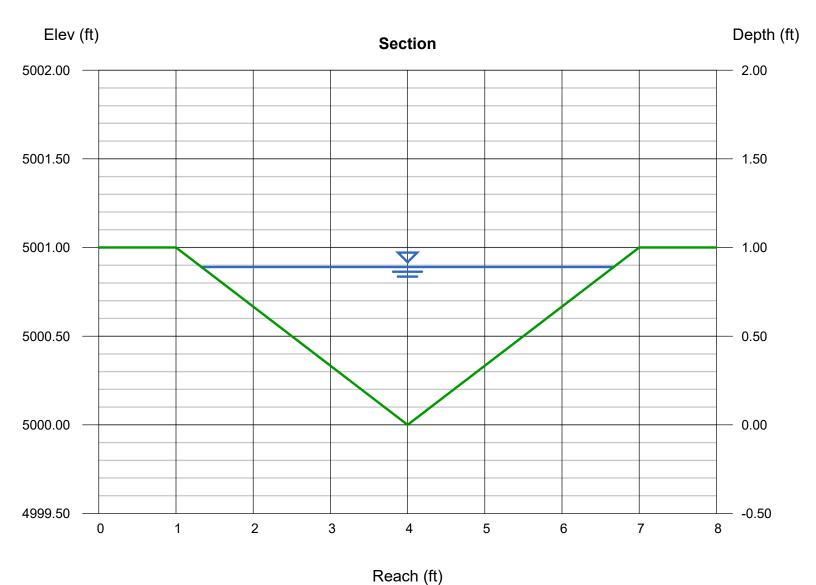
Friday, May 29 2020

<Name>

Compute by:

Known Q (cfs)

| Triangular | | Highlighted | |
|-------------------|--------------|---------------------|---------|
| Side Slopes (z:1) | = 3.00, 3.00 | Depth (ft) | = 0.89 |
| Total Depth (ft) | = 1.00 | Q (cfs) | = 5.840 |
| | | Area (sqft) | = 2.38 |
| Invert Elev (ft) | = 5000.00 | Velocity (ft/s) | = 2.46 |
| Slope (%) | = 1.10 | Wetted Perim (ft) | = 5.63 |
| N-Value | = 0.035 | Crit Depth, Yc (ft) | = 0.75 |
| | | Top Width (ft) | = 5.34 |
| Calculations | | EGL (ft) | = 0.98 |



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Friday, May 29 2020

<Name>

| Triangular Side Slopes (z:1) Total Depth (ft) | = 3.00, 3.00 = 1.00 |
|--|------------------------|
| Invert Elev (ft) | = 5000.00 |

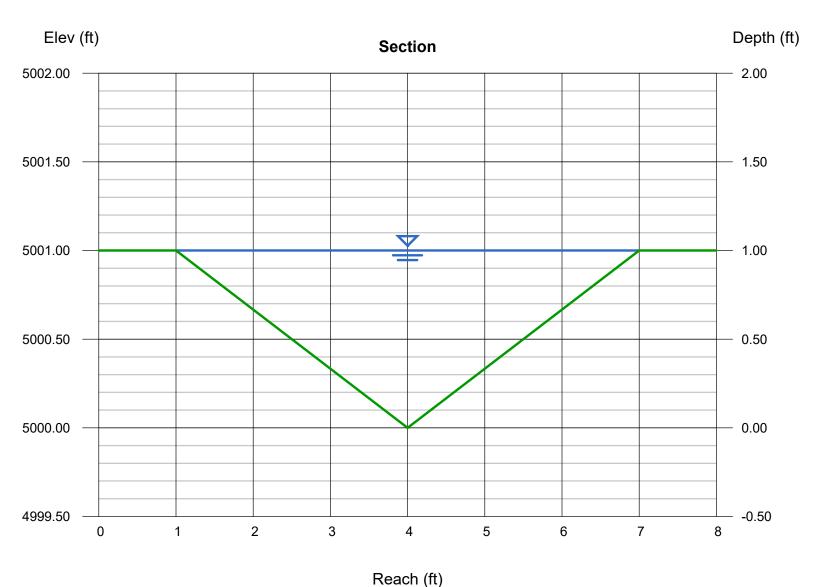
Invert Elev (ft) = 5000.00 Slope (%) = 1.10 N-Value = 0.035

Calculations

Compute by: Q vs Depth

No. Increments = 5

| Highlighted | |
|---------------------|---------|
| Depth (ft) | = 1.00 |
| Q (cfs) | = 8.123 |
| Area (sqft) | = 3.00 |
| Velocity (ft/s) | = 2.71 |
| Wetted Perim (ft) | = 6.32 |
| Crit Depth, Yc (ft) | = 0.86 |
| Top Width (ft) | = 6.00 |
| EGL (ft) | = 1.11 |
| | |



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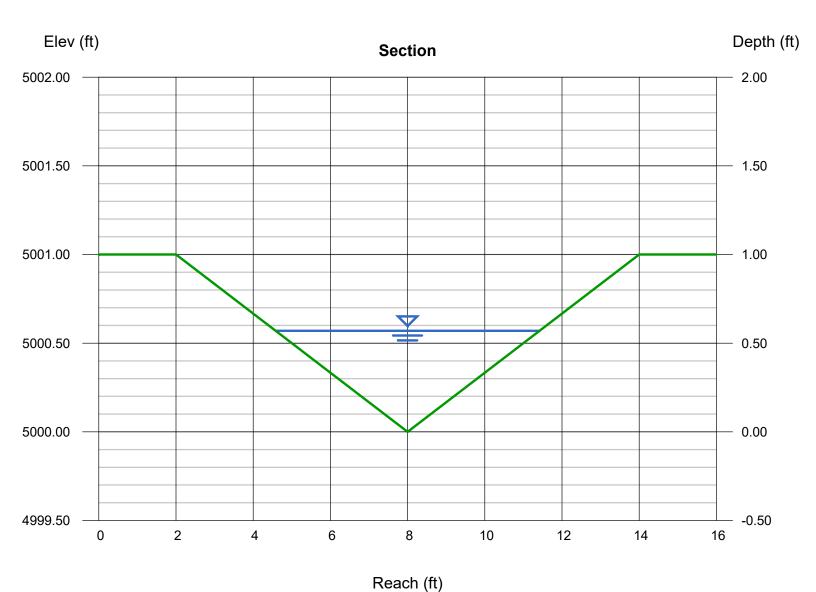
= 3.28

Friday, May 29 2020

<Name>

Known Q (cfs)

| Triangular | | Highlighted | |
|-------------------|--------------|---------------------|---------|
| Side Slopes (z:1) | = 6.00, 6.00 | Depth (ft) | = 0.57 |
| Total Depth (ft) | = 1.00 | Q (cfs) | = 3.280 |
| | | Area (sqft) | = 1.95 |
| Invert Elev (ft) | = 5000.00 | Velocity (ft/s) | = 1.68 |
| Slope (%) | = 0.47 | Wetted Perim (ft) | = 6.93 |
| N-Value | = 0.025 | Crit Depth, Yc (ft) | = 0.46 |
| | | Top Width (ft) | = 6.84 |
| Calculations | | EGL (ft) | = 0.61 |
| Compute by: | Known Q | | |
| | | | |



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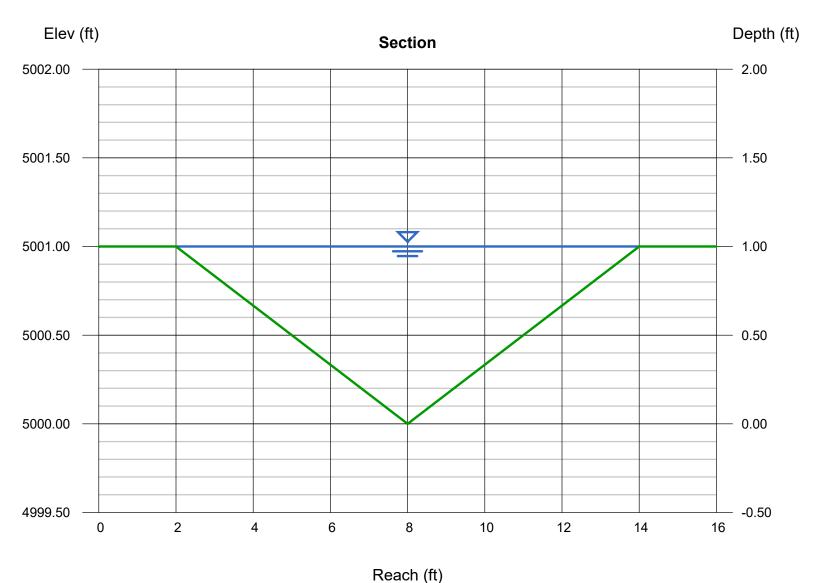
Friday, May 29 2020

<Name>

| Triangular Side Slopes (z:1) Total Depth (ft) | = 6.00, 6.00 = 1.00 | |
|---|--------------------------------|--|
| Invert Elev (ft) Slope (%) N-Value | = 5000.00 = 0.47 = 0.025 | |

Calculations
Compute by: Q vs Depth
No. Increments = 29

Highlighted Depth (ft) = 1.00 Q (cfs) = 15.26 Area (sqft) = 6.00Velocity (ft/s) = 2.54 Wetted Perim (ft) = 12.17 Crit Depth, Yc (ft) = 0.84Top Width (ft) = 12.00 EGL (ft) = 1.10



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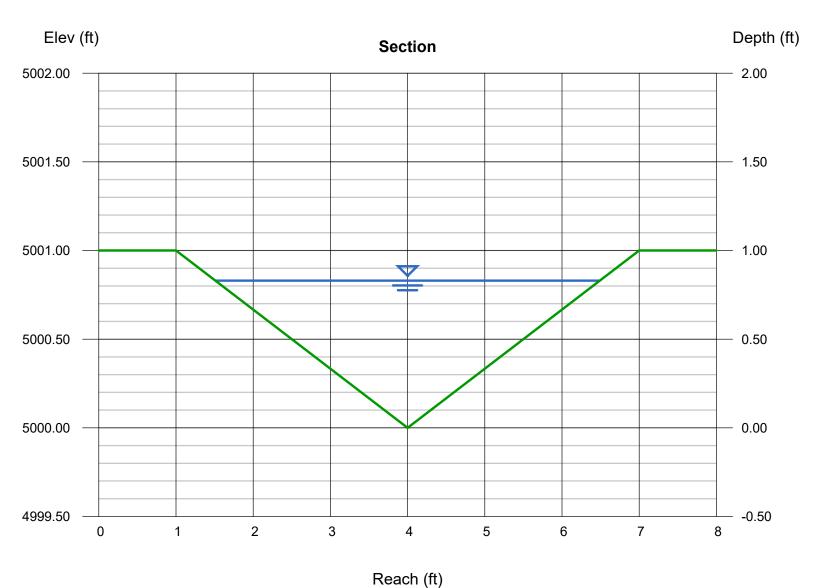
= 8.09

Friday, May 29 2020

<Name>

Known Q (cfs)

| Triangular | | Highlighted | |
|-------------------|--------------|---------------------|---------|
| Side Slopes (z:1) | = 3.00, 3.00 | Depth (ft) | = 0.83 |
| Total Depth (ft) | = 1.00 | Q (cfs) | = 8.090 |
| | | Area (sqft) | = 2.07 |
| Invert Elev (ft) | = 5000.00 | Velocity (ft/s) | = 3.91 |
| Slope (%) | = 2.97 | Wetted Perim (ft) | = 5.25 |
| N-Value | = 0.035 | Crit Depth, Yc (ft) | = 0.86 |
| | | Top Width (ft) | = 4.98 |
| Calculations | | EGL (ft) | = 1.07 |
| Compute by: | Known Q | | |
| | | | |



Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Friday, May 29 2020

<Name>

| Side Slopes (z:1) Total Depth (ft) | = 3.00, 3.00 = 1.00 |
|------------------------------------|------------------------|
| Invert Elev (ft) | = 5000.00 |
| Slope (%) | = 2.97 |
| N-Value | = 0.035 |

= 5

Calculations
Compute by: Q vs Depth

No. Increments

Highlighted Depth (ft) = 1.00Q (cfs) = 13.35Area (sqft) = 3.00Velocity (ft/s) = 4.45 Wetted Perim (ft) = 6.32Crit Depth, Yc (ft) = 1.00Top Width (ft) = 6.00EGL (ft) = 1.31

