

DS #:

5124

APN:

162-03-801-005

PROJECT:

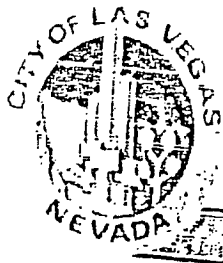
Fremont K-8 School

SUBMITAL:

2nd Submittal S. Supplement

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM		DATE: June 20, 2019
TO: Land Development Services Department of Building & Safety		FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: Fremont K-8 School	
Cross Streets:	SWQ of Maryland Pkwy. & St. Louis Avenue	COPIES TO: Lochsa Engineering
File Number:	F:\Depot\DSMemos\DS5124B.doc	Clark County School District
Parcel Number:	162-03-801-005	Bart Anderson, P.E., DevCo
Zoning Action:	SDR-76201 & VAR-76200	
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES	NO X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	4/15/2019	5/2/2019	Not Approved	\$400.00	3091475: \$400
2 nd Submittal & Supplement	5/20/2019 & 6/19/2019	6/20/2019	See Comments Below	\$400.00	3138677: \$400
TOTAL FEES (LDDRS):				\$800.00	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

1. Provide a notarized letter from the *School District* acknowledging for the maintenance and repair of the sum pump prior to the final approval of the improvement plans.
2. Provide a note on the grading plan: *All Onsite Storm Drain Systems and the associated facilities are Privately Owned and to be Privately Maintained by the School.*
3. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

In an effort to increase administrative efficiency, for all original and re-submittal packages including updates and the addenda, the City of Las Vegas Public Works Department requires both a hardcopy and a digital copy (PDF) on CD for the drainage study.

A letter sealed and signed by a Nevada registered civil engineer must be included in every submittal certifying documents on the electronic CD matches 100% of the hardcopy submittal. The new submittal requirement is effective on May 1, 2019. If there are any questions regarding these new requirements, please contact Albert Sung in the City Flood Control Section at (702) 229-6541.



Sample Letter to
certify CD.pdf

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

END OF REMARKS

ays

T/R/S: T21S/R61E/03

AREA R-03



**LAS VEGAS
CITY COUNCIL**

CAROLYN G. GOODMAN
Mayor

LOIS TARKANIAN
Mayor Pro Tem

STAVROS S. ANTHONY
BOB COFFIN
MICHELE FIORE
CEDRIC CREAR
WARD 2 (Vacant)

SCOTT D. ADAMS
City Manager

DEPARTMENT OF PLANNING
ROBERT SUMMERFIELD
DIRECTOR

**DEVELOPMENT
SERVICES CENTER**

333 N. RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NV 89106
702.229.6301 | VOICE
702.474.7463 | FAX
711 | TTY



cityoflasvegas
lasvegasnevada.gov

Fremont K-8

May 29, 2019

Ms. Linda Perri
School Board of Trustees
1180 Military Tribute Place
Henderson, Nevada 80974

**RE: SDR-76201 [PRJ-75927] - SITE DEVELOPMENT PLAN REVIEW
RELATED TO VAR-76200
PLANNING COMMISSION MEETING OF MAY 28, 2019**

Dear Applicant:

The Planning Commission at a regular meeting held on May 28, 2019 voted to recommend **APPROVAL** of a request for a Site Development Plan Review FOR A PROPOSED 98,107 SQUARE-FOOT PUBLIC SCHOOL, PRIMARY on 8.00 acres at 1100 East St. Louis Avenue (APN 162-03-801-005), C-V (Civic) Zone, Ward 3 (Coffin) [PRJ-75927].

This approval is subject to the following conditions:

Planning

1. Approval of and conformance to the Conditions of Approval for Variance (VAR-76200) shall be required, if approved.
2. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.
3. All development shall be in conformance with the site plan stamped 05/13/19, building elevations stamped 03/27/19, and landscape plan stamped 05/14/19, except as amended by conditions herein.
4. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.
5. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

6. The applicant shall coordinate with the City Surveyor and other city staff to determine the most appropriate mapping action necessary to consolidate the existing lots. The mapping action shall be completed and recorded prior to the issuance of any building permits.
7. A technical landscape plan, signed and sealed by a Registered Architect, Landscape Architect, Residential Designer or Civil Engineer, must be submitted prior to or at the same time application is made for a building permit. A permanent underground sprinkler system is required, and shall be permanently maintained in a satisfactory manner; the landscape plan shall include irrigation specifications. Installed landscaping shall not impede visibility of any traffic control device.
8. A fully operational fire protection system, including fire apparatus roads, fire hydrants and water supply, shall be installed and shall be functioning prior to construction of any combustible structures.
9. All City Code requirements and design standards of all City Departments must be satisfied, except as modified herein.

Public Works

10. Correct all Americans with Disabilities Act (ADA) deficiencies, if any, on the sidewalk along St. Louis Avenue adjacent to this site in accordance with code requirements of Title 13.56.040 to the satisfaction of the City Engineer concurrent with development of this site. All existing paving damaged or removed by this development shall be restored at its original location and to its original width concurrent with development of this site.
11. Landscape and maintain all unimproved rights-of-way, if any, adjacent to this site. All landscaping and private improvements installed with this project shall be situated and maintained so as to not create sight visibility obstructions for vehicular traffic at all development access drives and abutting street intersections.
12. Submit a License Agreement for landscaping and private improvements in the St. Louis Avenue public right-of-way, if any, adjacent to this site prior to this issuance of permits for these improvements. The applicant must carry an insurance policy for the term of the License Agreement and add the City of Las Vegas as an additionally insured entity on this insurance policy. If requested by the City, the applicant shall remove property encroaching in the public right-of-way at the applicant's expense pursuant to the terms of the City's License Agreement. The installation and maintenance of all private improvements in the public right of way shall be the responsibility of the adjacent property owner(s) and shall be transferred with the sale of the property for the entire term of the License Agreement. Coordinate all requirements for the License Agreement with the Land Development Section of the Department of Building and Safety (702-229-4836).

13. The bus pick up and drop off at the eastern most driveway shall be limited to right in, right out, and left out access only. West bound left turn movements from Saint Louis Avenue into the eastern most driveway are not permitted.
14. A Traffic Impact Analysis or other information acceptable to the City Traffic Engineer must be submitted to and approved by the Department of Public Works prior to issuance of any building or grading permits. Comply with the recommendation of the City Traffic Engineer.
15. A Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to the issuance of any building or grading permits or submittal of any construction drawings, whichever may occur first. Provide and improve all drainageways recommended in the approved drainage plan/study. The developer of this site shall be responsible to construct such neighborhood or local drainage facility improvements as are recommended by the City of Las Vegas Neighborhood Drainage Studies and approved Drainage Plan/Study concurrent with development of this site.

This action by the Planning Commission on **May 28, 2019** is final unless a written appeal is filed with the City Clerk within ten days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access <http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm>, or contact the Department of Planning and Development at 702.229.6301 after **June 10, 2019**. No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,



Eric McCammond
Sr. Management Analyst
Case Planning Division

EM:nl

cc:

Ms. Diana Salazar
Clark County School District
1180 Military Tribute Place
Henderson, Nevada 80974



**LAS VEGAS
CITY COUNCIL**

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cityoflasvegas
lasvegasnevada.gov

Fremont K-8

May 29, 2019

Ms. Linda Perri
School Board of Trustees
1180 Military Tribute Place
Henderson, Nevada 80974

**RE: VAR-76200 [PRJ-75927] - VARIANCE RELATED TO SDR-76201
PLANNING COMMISSION MEETING OF MAY 28, 2019**

Dear Applicant:

The Planning Commission at a regular meeting held on May 28, 2019 voted to **APPROVE** a request for a Variance TO ALLOW DEVIATIONS FROM TITLE 19.10.020 C-V (CIVIC) DEVELOPMENT STANDARDS on 8.00 acres at 1100 East St. Louis Avenue (APN 162-03-801-005), C-V (Civic) Zone, Ward 3 (Coffin) [PRJ-75927].

This approval is subject to the following conditions:

Planning

1. Approval of and conformance to the Conditions of Approval for Site Development Plan Review (SDR-76201) shall be required, if approved.
2. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.
3. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.
4. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.
5. All City Code requirements and design standards of all City departments must be satisfied, except as modified herein.

VAR-76200 [PRJ-75927] - Page Two
May 29, 2019

This action by the Planning Commission on **May 28, 2019** is final unless a written appeal is filed with the City Clerk within ten days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access <http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm>, or contact the Department of Planning and Development at 702.229.6301 after **June 10, 2019**. No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,



Eric McCammond
Sr. Management Analyst
Case Planning Division

EM:nl

cc:

Ms. Diana Salazar
Clark County School District
1180 Military Tribute Place
Henderson, Nevada 80974

12 June 2019

C-V

City of Las Vegas
Planning Department
333 N. Rancho Drive
Las Vegas, Nevada 89106

Subject: Planning approval for sites with grade differences of 2 feet
Drainage Study for Fremont K-8 School
SDR-76201, VAR-76200 (PRJ-75297) DS05124
Lochsa Engineering No. 181203

To Whom It May Concern:

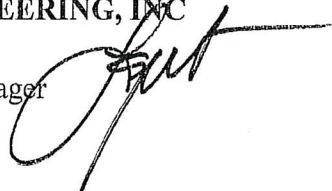
A comment received during our Drainage Study review is the requirement to submit our civil plans to the Planning Department due to the proposed grading altering the existing site grades by more than 2 feet at various locations throughout the project site.

The site in question is APN: 162-03-801-005 and is approximately 8.0 acres in area, Along the south side of St Louis west of Maryland Parkway. There is an existing school which will be torn down, and a new school constructed in the same location. The Drainage Study for the site have determined the 100-year flow depth in St Louis along the site to be approximately 0.66ft (or 0.16ft above the top of curb). The water surface elevation at the upstream end of the property is 2005.35, with the finished floor set at 2003.58 (difference of 1.77ft). The driveways have been humped more than the flow depth (0.5ft) and a 1.5ft berm placed along St Louis to keep flows from entering the site. It is noted that only the west end of the property are the buildings set below flow depth of the street, and that the onsite flows exist onto St Louis at the eastern property line. The lower finished floor elevation allows the site to meet ADA and CCSD slope requirements, while the berm and raised entrances protect the site from flows. proposed grades resulted in a grade difference of nearly 2 feet below existing grades.

In conclusion, we request the approval of the Planning Department for the proposed grade difference from existing elevations for the project site, with flood protection of the building and to provide a fully accessible development and usage.

If you have any additional comments or questions, please feel free to contact our office at your convenience.

Sincerely,
LOCHSA ENGINEERING, INC
Lazell Preator, PE
Senior Project Manager



PLANS APPROVED
PLANNING
Dept. of Planning
City of Las Vegas, Nevada

LHM JUN 19 2019

2' GRADE DIFFERENCE ONLY
Conforms to the minimum requirement of
LVMC Title 19; applicable Master Plan
Development standards and/or Conditions of
Approval. Make No Change Without Approval.
Plan is Not a Permit to Violate Any Ordinance.

**Addendum to
Technical Drainage Study
For
Fremont K-8 School
(MPID#1623)**

Lochsa Job No. 181203

May 2019

Prepared for:

Clark County School District
1180 Military Tribute Place
Henderson, NV 89074

Prepared by:

Lochsa Engineering
6345 South Jones Boulevard
Suite 100
Las Vegas, Nevada 89118
(702) 365-9312

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL
DRAINAGE STUDY INFORMATION FORM

Name of Development: Fremont K-8 School Date: May 13, 2019

Location of Development: a) Descriptive (Cross Streets) North/South: Maryland Parkway
East/West: St. Louis Avenue

b) Section: 3 Township: 21 South Range: 61 East

c) APN: 162-03-801-005

Name of Owner: Clark County School District Board of Trustees

Telephone No.: 702-799-6450 Fax No.: _____ E-Mail Address: _____

Address: 1180 Military Tribute Place Henderson, NV 89074

Contact Person-Name: Abdul Bakhshi Telephone No.: (702) 365-9312

* E-Mail Address: Abdul.bakhshi@lochsa.com Fax No.: (702) 365-9317

Firm: Lochsa Engineering

Address: 6345 South Jones Boulevard, Suite 100, Las Vegas, Nevada 89118

Type of Land Development/Land Disturbance Process:

☐ Rezoning	☐ Subdivision Map	☐ Clearing and Grading Only
☐ Parcel Map	☐ Planned Unit Development	☐ Other (Please specify below)
☐ Large Parcel Map	☒ Building Permit	

1. Total Owned Land Area: At Site: 8.0 +/- Acres Being Developed/Disturbed: 8.0 +/- Acres

2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No

3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes** ☒ No

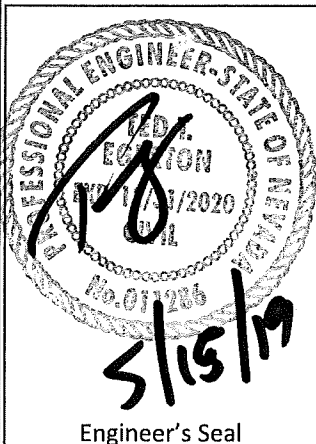
4. Proposed type of development (Residential, Commercial, Etc.): School buildings, play area and parking addition

5. Approximate upstream land area which drains to the subject site: 70.0 +/- Acres

6. Has the site drainage been evaluated in the past? ☐ YES ☒ NO If yes, please identify documentation: N/A

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Northeasterly towards St. Louis Avenue

8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

*New Required Field

**Review and concurrence of the Clark County Regional Flood Control District is required.

	Revision	Date
Local Entity File No. _____		

REFERENCE:

STANDARD FORM 1

May 16, 2019

Mr. Albert Sung, P.E.
City of Las Vegas Public Works Department
Flood Control Division
333 N Rancho Dr.
Las Vegas, NV 89106

Subject: **Addendum to the Technical Drainage Study for Fremont K-8 School**
CLV DS5124A
Parcel Number 162-03-801-005
Lochsa Job #181203

Dear Mr. Sung,

Lochsa Engineering is in receipt of your comment letter for the above referenced project. In response to your comments, the following responses are being offered:

1. Provide a copy of the zoning/planning conditions associated with this site (**SDR-76201 & VAR-76200**) with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.

Response 1: Acknowledged. A copy of the zoning/planning conditions associated with the subject site shall be provided upon the approval of City Council meeting on the May 20th, 2019. We will provide City of Las Vegas Public Works Department of Flood Control with a copy of the conditions.

2. Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.

Response 2: Acknowledged. We are in the process of obtaining the approval letter from the City Planning and Development Department for the 2-foot grade difference for the subject site. We shall provide a copy to the City of Las Vegas Public Works upon receiving the approval letter.

3. The "**Las Vegas Valley 2018 Flood Control Master Plan Update**" (LVVMPU) is officially adopted for public use. Replace all the pertinent MPU exhibits such as the F-Maps and H-Maps (replaced by the W-Maps) with the 2018 version in the next submittal.

Response 3: Acknowledged. Please refer to the copies of the 2018 version of F-Maps and W-Maps within this addendum.

4. *Sheet DR1 (Existing Condition Basin Map):* It appears that concentration point CPX2 is wrongly located at the east end of the parking lot. Should it be located exactly at the northeast corner of the school site? Review and revise accordingly.

Response 4: Noted. The combination point 'CPX2' is now replaced by 'CPX3' (17/32cfs) which represent to total storm generated runoff for the subject site. Since the addition of offsite basin 'OFD2', the HEC-1 analysis for the existing condition has been revised as well. Offsite basin 'OFD2' delineation is based on comment #6 below. Therefore, combination point 'CPX3' has been relocated to the northeast corner of the subject site. Please refer to the revised figure DR1, Existing Condition Basin Map.

5. *Sheet DR2 (Interim / Developed Basin Map):* It also appears that the location of concentration point CPD1 is not correct. Review and revise accordingly.

Response 5: Noted. The combination point 'CPD1' has been relocated to the northeast corner of basin 'OND1'. Please refer to the revised figure DR2, Interim/Developed Basin Map.

6. Per the *Baker Park Improvement Plans*, it appears that the Park is basically drain through the subject school site which does not agree with the depiction of only *Basin OFD1* is impacting the school site as shown in the subject DR1 and DR2 Basin Maps.

The engineer should reference the drainage basin maps of the *Baker Park* project and include additional offsite basins other than *OFD1* into DR1 and DR2 in the next submittal.

Response 6: Noted. Upon reviewing the Baker Park approved civil plans, we have delineated offsite basin 'OFD2' (2/4cfs – 1.32acres). Offsite basin 'OFD2' is comprised of mostly surface parking and impacts the subject site from the westerly direction and the storm generated runoff shall drain through the subject site.

Per the revised HEC-1 analysis for the Existing Condition, offsite basin 'OFD2' is combined with onsite basin 'EX1' at combination point 'CPX2' (9/16cfs) and combination point 'CPD1' (11/21cfs) for the Developed Condition, respectively. Please refer to the exhibits DR1 and DR, as well as the revised HEC-1 analysis for both Existing and Developed Conditions enclosed within this addendum, respectively.

7. Provide a Demolition Plan in the next submittal.

Response 7: Acknowledged. Please refer to the demolition Plan within this addendum along with the grading plan and detail sheet.

8. A berm is provided at the back of sidewalk in *St. Louis Avenue* for onsite flood protection. The 100-year flow velocity in *St. Louis* is 6.5 ft/s which is erosive. Provide erosion protection measures on the side of the berm facing the street. Revise the plans, construction callout and *Detail Sections A/C6.02* and *B/C6.02* accordingly.

Response 8: Noted. The flow depth along *St. Louis avenue* is 0.66ft with a velocity of 6.51ft/sec. However, only 0.06ft of flow would be against the berm from back of side walk. Per our email conversation with Albert Sung PE of City of Las Vegas, the hydraulic section performed with the depth of 0.06ft indicate a velocity of 2.30ft/sec which is below 5ft/sec. The velocity is considered non erosive since it is below 5ft/sec. Please refer to the hydraulic section, detail section *B/C6.02* from the civil plans and the copy of the email enclosed within this addendum.

9. Address in the next submittal whether an overflow path is provided if the onsite storm drain system is totally clogged and the proposed finished floor elevations will still meet the criteria.

Response 9: Noted. In case if the system is completely clogged, the overflow path is both easterly and northerly direction. We have provided overflow hydraulic sections at 'OV1' and 'OV2' to show the FF elevations are protected under the 100-yr storm generated runoff and meet the criteria. Per the hydraulic sections, water surface elevation has to rise to 3.51ft in order to weir over the 6cfs generated from onsite basin 'OND3', which remains lower than the FF of 2003.58.

Please refer to the hydraulic sections labeled as 'OV1' and 'OV2' within this addendum.

10. The proposed onsite storm drain is a bubbler system. Provide a bleeder line to release the residual water in the inlet.

If bleeder line is not possible, the engineer should consider raising the finished floor elevations and provide gravity flow in the courtyard area with or without a storm drain system.

Address and resolve in the next submittal.

Response 10: Noted. In the original submittal we provided a sump pump for the bubbler system per "Storm Drain Construction Note #3" per the grading plan. Construction Note #3 specifically calls out the installation of a 4ft x 4ft Jensen drop inlet with a sump pump by others. The sump pump shall bleed the residual water for the system, upon receding of the storm event.

We are also in the process of obtaining the letter from the School District for the maintenance and repair of the sump pump and will provide a copy upon receiving it.

11. Provide a note on the grading plan: *All Onsite Storm Drain Systems and the associated facilities are Privately Owned and to be Privately Maintained by the School.*

Response 11: Acknowledged. The grading plans have been revised to include the following note.

12. Label finished floor elevation of all adjacent houses in the grading plans in the next submittal.

Response 12: Acknowledged. The grading plans have been revised to include the adjacent property finished floors.

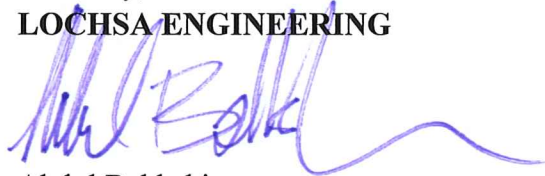
13. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

Response 13: Acknowledged. The grading plans have been revised to include the following note in all the pertinent civil sheets.

If you have any questions or comments, please do not hesitate to contact our office at your earliest convenience.

Sincerely,

LOCHSA ENGINEERING



Abdul Bakhshi



5/15/19

Copy of the Comment Letter

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM

DATE:

May 2, 2019

TO:

Land Development Services
Department of Building & Safety

FROM:

Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

SUBJECT:

Drainage Study for:

Fremont K-8 School

COPIES TO:

Lochsa Engineering

Cross Streets:

SWQ of Maryland Pkwy. & St. Louis Avenue

Clark County School District

File Number:

F:\Depot\DSMemos\DS5124A.doc

Bart Anderson, P.E., DevCo

Parcel Number:

162-03-801-005

Zoning Action:

SDR-76201 & VAR-76200

FEMA Flood Zone

YES

NO

X

Proposed Storm Drain

YES

NO

X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1 st Submittal	4/15/2019	5/2/2019	See Comments Below	\$400.00	3091475: \$400
TOTAL FEES (LDDRS):				\$400.00	----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
X	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

1. Provide a copy of the zoning/planning conditions associated with this site (**SDR-76201 & VAR-76200**) with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.
2. Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.
3. The "**Las Vegas Valley 2018 Flood Control Master Plan Update**" (LVVMPU) is officially adopted for public use. Replace all the pertinent MPU exhibits such as the F-Maps and H-Maps (replaced by the W-Maps) with the 2018 version in the next submittal.
4. *Sheet DR1 (Existing Condition Basin Map)*: It appears that concentration point CPX2 is wrongly located at the east end of the parking lot. Should it be located exactly at the northeast corner of the school site? Review and revise accordingly.
5. *Sheet DR2 (Interim / Developed Basin Map)*: It also appears that the location of concentration point CPD1 is not correct. Review and revise accordingly.

6. Per the *Baker Park Improvement Plans*, it appears that the Park is basically drain through the subject school site which does not agree with the depiction of only *Basin OFD1* is impacting the school site as shown in the subject DR1 and DR2 Basin Maps.

The engineer should reference the drainage basin maps of the *Baker Park* project and include additional offsite basins other than *OFD1* into DR1 and DR2 in the next submittal.

7. Provide a Demolition Plan in the next submittal.
8. A berm is provided at the back of sidewalk in *St. Louis Avenue* for onsite flood protection. The 100-year flow velocity in *St. Louis* is 6.5 ft/s which is erosive. Provide erosion protection measures on the side of the berm facing the street. Revise the plans, construction callout and *Detail Sections A/C6.02* and *B/C6.02* accordingly.
9. Address in the next submittal whether an overflow path is provided if the onsite storm drain system is totally clogged and the proposed finished floor elevations will still meet the criteria.
10. The proposed onsite storm drain is a bubbler system. Provide a bleeder line to release the residual water in the inlet.

If bleeder line is not possible, the engineer should consider raising the finished floor elevations and provide gravity flow in the courtyard area with or without a storm drain system.

Address and resolve in the next submittal.

11. Provide a note on the grading plan: *All Onsite Storm Drain Systems and the associated facilities are Privately Owned and to be Privately Maintained by the School.*
12. Label finished floor elevation of all adjacent houses in the grading plans in the next submittal.
13. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

In an effort to increase administrative efficiency, for all original and re-submittal packages including updates and the addenda, the City of Las Vegas Public Works Department requires both a hardcopy and a digital copy (PDF) on CD for the drainage study.

A letter sealed and signed by a Nevada registered civil engineer must be included in every submittal certifying documents on the electronic CD matches 100% of the hardcopy submittal. The new submittal requirement is effective on May 1, 2019. If there are any questions regarding these new requirements, please contact Albert Sung in the City Flood Control Section at (702) 229-6541.



Sample Letter to
certify CD.pdf

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see <http://ndep.nv.gov/bwpc/storm01.htm> or call (775) 687-9429.

END OF REMARKS
ays

T/R/S: T21S/R61E/03
AREA R-03

Response to Comment #3

Copy of the W-map and Updated F-map



LEGEND

-

AerialSource:Esri World Imagery 2017



ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
BHSA		BOULDER HIGHWAY SAHARA AVENUE						
0000	P	16' X 14' RCB	1350	3952	CSA13*	SW3	7.93	0.50
0026	P	14' X 11' RCB	4000	3952	CSA13*	SW3	7.93	1.30
0075	P	12' X 11' RCB	5280	3952	CSA13	SW3	7.93	2.11
0175	P	14' X 14' RCB	6000	3952	CSA13	SW3	7.93	0.67
0289	P	14' X 12' RCB	2300	3669	CSA11	SW3	7.55	0.87
CABZ		CEDAR AVENUE - BONANZA						
0000	E	72" RCP	525					0.30
0010	E	60" RCP	1450					0.30
CACH		CEDAR AVENUE CHANNEL						
0000	E	CONC CHNL 10'W 8'D 1.5:1 SS (REPLACED W/ CACH0001)	1681	2427	CCCA10-C	SW3	3.05	0.20
0001	P	CONC CHNL 22'W 12'D 0:1SS (REPLACES CACH0000)	1055	2427	CCCA10-C	SW3	3.05	0.20
0020	P	CONC CHNL 31'W 6.50:12'D 0:1SS (REPLACES CACH0000)	460	766	CCA10-C	SW3	0.90	2.19
0027	E	2: 15' X 5' RCBC @ MARION	82	766	CCA10-C	SW3	0.90	0.35
0029	E	CONC CHNL 10'W 8'D 1.5:1 SS	1284	766	CCA10-C	SW3	0.90	0.37
0051	E	2: 15' X 5' RCBC @ PAGE	64	766	CCA10-C	SW3	0.90	0.38
0053	E	CONC CHNL 10'W 6'D 1.5:1 SS	1275	766	CCA10-C	SW3	0.90	0.38
0079	E	2: 15' X 6' RCBC @ LAMB	100	594	CCA08-C	SW3	0.70	0.38
0081	E	CONC CHNL 12'W 6'D 1.5:1 SS	2562	594	CCA08-C	SW3	0.70	0.20
0127	E	1: 12' X 4' RCBC 2:11' X 4' RCBC @ SANDHILL	80	594	CCA08-C	SW3	0.70	0.20
0129	E	CONC CHNL 10'W 8'D 1.5:1 SS	971	594	CCA08-C	SW3	0.70	0.26
0146	E	2: 12' X 5.5' RCBC @ HONOLULU	62	594	CCA08-C	SW3	0.70	0.53
0148	E	CONC CHNL 10'W 8'D 1.5:1 SS	959	594	CCA08-C	SW3	0.70	0.53
CACN		CEDAR AVENUE - CHARLESTON						
0000	E	72" RCP	1867					0.41
0034	E	2: 48" RCP (REPLACE W/ CACN0035)	685	430	CCH70C	SW3	0.40	0.30
0035	P0	8' X 6' RCB (REPLACES CACN0034)	685	430	CCH70C	SW3	0.40	0.30
0049	E	66" RCP (REPLACE W/ CACN0050)	2146	430	CCH70C	SW3	0.40	0.60
0050	P0	6' X 7' RCB (REPLACES CACN0049)	2146	430	CCH70C	SW3	0.40	0.60
COLM		COLORADO / LAMB						
0000	E	72" RCP	1500	275	CH94	SW3	0.36	0.87
FLAG		FLAMINGO WASH - ALGONQUIN						
0026	E	60" RCP	427	432	FW21	FLAM3A	0.47	1.30
FLBN		FLAMINGO - BOULDER HIGHWAY NORTH						
0001	E	4: 10' X 6' RCB	350	4898	CCFR03	Boulder4	11.25	0.58
0008	E	2: 12' X 12' RCB	1055	4898	CCFR03	Boulder4	11.25	0.20
0028	E	3: 16' X 6' RCB	275	4898	CCFR03	Boulder4	11.25	0.20
0033	E	1: 15' X 10' RCB AND 1: 16' X 10' RCB	405	4898	CCFR03	Boulder4	11.25	0.20
0038	P	15' X 10' RCB	987	2471	CFR03	SW3	3.40	0.20
0056	P	24' X 6' RCB	391	2471	CFR03	SW3	3.40	7.00
0063	P	20' X 8' RCB	1393	2372	CFR04	SW3	3.21	0.68
0167	P	18' X 8' RCB	3565	2372	CFR04	SW3	3.21	0.38
0180	P	14' X 8' RCB	494	2013	CCH67A	SW3	2.43	1.80
0205	P	10' X 8' RCB	4478	2013	CCH67A	SW3	2.43	2.00
0275	P	12' X 8' RCB	223	1584	CCCH56	SW3	1.75	2.50
0280	P	10' X 6' RCB	925	928	CCH56	SW3	1.00	2.22
0281	P	10' X 7' RCB	2800	928	CCH56	SW3	1.00	1.33
0312	P	7' X 4' RCB	2160	621	CCH52	SW3	0.62	4.20
0342	P	7' X 4' RCB	2425	621	CCH52	SW3	0.62	4.20
FLBS		FLAMINGO - BOULDER HIGHWAY SOUTH						
0000	E	UNLINED MEDIAN CHNL 0'W 6.5'D 4.5:1 SS	4060	684	CB4	FLAM3A	1.38	1.30
0167	E	UNLINED MEDIAN CHNL 0'W 3.5'D 9:1 SS	8850	348	CB4N	FLAM3A	0.63	0.90
FLDN		DESERT INN DRAIN EAST						
0000	E	60" RCP (REPLACE W/ FLDN0001)	6160	959	CFW30AW	FLAM3A	2.12	1.22
0001	P0	12' X 5' RCB (REPLACES FLDN0000)	6160	959	CFW30AW	FLAM3A	2.12	1.22
0116	E	54" RCP (REPLACE W/ FLDN0117)	2330	954	CFW29	FLAM3A	1.82	1.77
0117	P0	10' X 5' RCB (REPLACES FLDN0116)	2330	954	CFW29	FLAM3A	1.82	1.77
0160	E	48" RCP (REPLACE W/ FLDN0161)	2950	742	CFW28	FLAM3A	1.51	1.28
0161	P0	10' X 5' RCB (REPLACES FLDN0160)	2950	742	CFW28	FLAM3A	1.51	1.28
FLMP		FLAMINGO WASH-MARYLAND PARKWAY SYSTEM						
0000	P	12' X 6' RCB	664	689	CCH60A	SW3	0.75	0.78
0013	P	12' X 4' RCB	1535	689	CCH60A	SW3	0.75	0.48

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
FLMP		FLAMINGO WASH-MARYLAND PARKWAY SYSTEM						
0042	P	6' X 4' RCB	1345	245	DFLAM	SW3	0.31	0.95
0068	P	42" RCP	475	245	DFLAM	SW3	0.31	0.61
FLWA		FLAMINGO WASH						
0080	E	CONC CHNL 90'W 8'D 0:1 SS	2665	9548	CFW36	FLAM5B	35.21	0.40
0130	E	CONC CHNL 70'W 10'D 0:1 SS	1470	9548	CFW36	FLAM5B	35.21	0.40
0136	E	TRANSITION CONC CHNL 104'W 12'D TO 70'W 10'D 0:1 SS	255	9548	CFW36	FLAM5B	35.21	3.79
0141	E	CONC CHNL 104'W 12'D 0:1 SS	450	9548	CFW36	FLAM5B	35.21	0.96
0150	E	CONC CHNL 104'W 9'D 0:1 SS	225	9548	CFW36	FLAM5B	35.21	6.00
0174	E	9: 10' X 6' RCBC @ LAMB	110	9504	CFW34	FLAM5B	34.77	1.40
0176	E	TRANSITION CONC CHNL 70'W 9'D TO 104'W 9'D 0:1 SS	290	9504	CFW34	FLAM5B	34.77	0.36
0181	E	CONC CHNL 70'W 9'D 0:1 SS	1270	9504	CFW34	FLAM5B	34.77	0.36
0200	E	CONC CHNL 70'W 8'D TO 12'D W/ PIER 0:1 SS	755	9504	CFW34	FLAM5B	34.77	0.50
0226	E	FREE SPAN BRIDGE 100'W 10'D @ I-515	170	9504	CFW34	FLAM5B	34.77	0.80
0228	E	CONC CHNL 70'W 8'D TO 12'D 0:1 SS	1500	9371	CFW33	FLAM5B	34.43	0.80
0255	E	2 SPAN BRIDGE 150'W 9'D @ BOULDER HWY	65	9371	CFW33	FLAM5B	34.43	1.00
0256	E	CONC CHNL 60'W 7.5'D 0:1 SS	40	6750	CFW33W	FLAM5B	23.17	1.00
0257	E	2 SPAN BRIDGE 150'W 9'D @ BOULDER HWY	60	6750	CFW33W	FLAM5B	23.17	1.00
0258	E	CONC CHNL 60'W 7.5'D 0:1 SS	750	6750	CFW33W	FLAM5B	23.17	0.44
0273	E	FREE SPAN BRIDGE 60'W 9'D @ MMMHP	20	6750	CFW33W	FLAM5B	23.17	0.40
0274	E	CONC CHNL 60'W 8.1'D 0:1 SS	1370	6750	CFW33W	FLAM5B	23.17	1.00
0295	E	CONC CHNL 60'W 8.1'D 0:1 SS	430	6416	CFW31	FLAM5B	21.56	0.80
0307	E	CONC CHNL 60'W 8.1'D 2:1 SS	410	6416	CFW31	FLAM5B	21.56	0.70
0314	E	CONC CHNL 60'W 8.1'D 2:1 SS	1500	6106	CFW30B	FLAM5B	20.19	0.90
0347	E	5: 10' X 8' RCBC @ MOJAVE	80	6106	CFW30B	FLAM5B	20.19	0.94
0348	E	CONC CHNL 30'W 12'D 1:1 SS	1150	6106	CFW30B	FLAM5B	20.19	0.70
0375	E	5: 10' X 8' RCBC @ DESERT INN	140	6074	CFW23	FLAM5B	18.30	2.70
0377	E	CONC CHNL 50'W 9.5'D 0:1 SS	1372	6074	CFW23	FLAM5B	18.30	1.04
0399	E	FREE SPAN BRIDGE 60'W 16'D @ MCLEOD	130	6074	CFW23	FLAM5B	18.30	0.50
0401	E	CONC CHNL 50'W 11.5'D 0:1 SS	107	6074	CFW23	FLAM5B	18.30	0.50
0406	E	CONC CHNL 33'W 11.5'D 0:1 SS	716	5277	CFW23W	FLAM5B	17.42	0.79
0419	E	CONC CHNL 33'-50'W 9.8'D 0:1 SS	206	5277	CFW23W	FLAM5B	17.42	2.00
0423	E	CONC CHNL 50'W 9.8'D 0:1 SS	1686	5277	CFW23W	FLAM5B	17.42	0.76
0455	E	CONC CHNL 50'-75'W 9.8'D 0:1 SS	170	5277	CFW23W	FLAM5B	17.42	1.83
0458	E	CONC CHNL 75'-80'W 9.8'D 0:1 SS	347	5277	CFW23W	FLAM5B	17.42	1.50
0471	E	5: 10' X 8' RCBC @ EASTERN	110	1841*	CFW22W*	FLAM5B	14.32	1.30
0472	E	22' X 8' RCBC @ EASTERN	110	3406*	CFW22W*	FLAM5B	14.32	0.50
0473	E	GRASS CHNL 60'W 15'D 2:1 SS	100	5247	CFW22W	FLAM5B	14.32	0.47
0477	E	3 SPAN BRIDGE 47'W 15'D	10	5247	CFW22W	FLAM5B	14.32	0.80
0478	E	GRASS CHNL 60'W 15'D 2:1 SS	520	5247	CFW22W	FLAM5B	14.32	0.47
0481	E	3: 90" CMAP @ TIOGA (REPLACE W/ FLWA0482)	60	5247	CFW22W	FLAM5B	14.32	0.87
0482	P	4: 20' X 6' RCBC @ TIOGA (REPLACES FLWA0481)	60	5247	CFW22W	FLAM5B	14.32	0.87
0483	E	GRASS CHNL 60'W 15'D 2:1 SS	300	5247	CFW22W	FLAM5B	14.32	0.63
FW15		FREEWAY CHANNEL FROM DESERT INN TO EXPRESSWAY						
0000	E	3: 12' X 10' RCB	2170	3685	CAL93	Boulder4	8.93	0.17
LCCH		LAS VEGAS CREEK CHANNEL						
0000	E	2: 12' X 7' RCB	730	3212	CAL93C	MEADOWS4	9.90	1.28
0013	E	2: 12' X 6' RCB	2035	3050	CLC20-C	MEADOWS4	9.60	0.82
LVBZ		LAS VEGAS WASH - BONANZA						
0000	P	2: 12' X 7' RCB	1760	1753	CBN15-C	SW3	2.15	0.40
0025	P	2: 12' X 7' RCB	2700	1753	CBN15-C	SW3	2.15	0.40
0064	P	2: 12' X 7' RCB	2630	1603	CBN12-C	SW3	1.87	0.40
0114	P	2: 12' X 6' RCB	2740	1311	CBN10-C	SW3	1.54	0.40
0166	E	54" RCP (REPLACE W/ LVBZ0167)	930	1106	CBN09	SW3	1.29	0.45
0167	P0	10' X 9' RCB (REPLACES LVBZ0166)	930	1106	CBN09	SW3	1.29	0.45
0187	E	48" RCP (REPLACE W/ LVBZ0188)	1235	1106	CBN09	SW3	1.29	0.71
0188	P0	9' X 9' RCB (REPLACES LVBZ0187)	1235	1106	CBN09	SW3	1.29	0.71
0210	E	42" RCP (REPLACE W/ LVBZ0211)	704	1004	CBN08	SW3	1.05	1.37
0211	P0	8' X 8' RCB (REPLACES LVBZ0210)	704	1004	CBN08	SW3	1.05	1.37
0223	E	36" RCP (REPLACE W/ LVBZ0224)	2275	856	CBN03	SW3	0.84	0.72
0224	P0	8' X 8' RCB (REPLACES LVBZ0223)	2275	856	CBN03	SW3	0.84	0.72

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
LVCA 0000	P	LAS VEGAS WASH - CHARLESTON 12' X 8' RCB	4600	985	CCH77-C	SW3	1.16	0.30
LVCO 0012	E	COLORADO AVENUE SYSTEM 14' X 8' RCB	2560	1144	CNEL06	SW3	1.32	0.24
0064	E	10' X 8' RCB	2165	901	CCH94	SW3	1.00	0.24
0106	E	10' X 8' RCB	590	402	CCH92-C	SW3	0.37	0.24
0109	E	10' X 5' RCB	2350	402	CCH92-C	SW3	0.37	0.67
LVOE 0345	P	OWENS AVENUE - EAST 13' X 12' RCB	990	2576	DLVOE	SW5	22.61	0.60
LVST 0000	P	LAS VEGAS WASH - STEWART 10' X 10' RCB	4684	1316	CST03-C	SW3	1.40	0.56
0088	P	10' X 9' RCB	4654	1135	CST01-C	SW3	1.18	0.56
0188	P	8' X 8' RCB	1980	601	CCA04	SW3	0.59	0.40
LVWH 0389	E	WASHINGTON AVENUE CHANNEL 12' X 8' RCB	2110	1562 ^A	CV1-C ^A	SWSSC	14.95	0.90
0426	E	16' X 8' RCB	150	1562 ^A	CV1-C ^A	SWSSC	14.95	1.08
0429	E	SPLITTER STRUCTURE (2: 12' X 8' RCB)	190	2870	DCLC21	SW5	22.61	1.90
0431	E	3: 14.33' X 10' RCB	665	2870	DCLC21	SW5	22.61	0.15
0446	E	JUNCTION STRUCTURE	69	2870	DCLC21	SW5	22.61	0.15
0447	E	3: 14.33' X 10' RCB	1955	5193	CCAL93	SW5	22.05	0.15
0484	E	CONFLUENCE STRUCTURE	455	5193	CCAL93	SW5	22.05	0.15
SAEA 0000	P	SAHARA AVENUE - EASTERN LATERAL 10' X 7' RCB	1440	492	CFR02	SW3	0.65	0.20
VAVD 0000	P	VEGAS VALLEY DRIVE 7' X 5' RCB	1300	649	CFW41	FLAM3A	1.30	2.10
0025	P	84" RCP	5300	649	CFW41	FLAM3A	1.30	1.60
VBCH 0000	E	VAN BUSKIRK CHANNEL 12' X 3' RCB	500	637	CVB16	FLAM3A	1.16	1.00
0008	E	8' X 5' RCB	5490	637	CVB16	FLAM3A	1.16	1.00
VBEA 0000	P	VAN BUSKIRK - EASTERN AVE 10' X 6' RCB	3020	696	CVB11	FLAM3A	2.85	1.30
VBMC 0000	E	VAN BUSKIRK - MCLEOD DRIVE 2: 8' X 8' RCB	3850	931	CVB13	FLAM3A	2.99	0.50
VBTW 0000	E	VAN BUSKIRK - TWAIN 18" RCP (REPLACE W/ VBTW0001)	6640	379	CB2	FLAM3A	0.74	0.70
0001	P0	84" RCP (REPLACES VBTW0000)	6640	379	CB2	FLAM3A	0.74	0.70
WAGC 0000	E	WASHINGTON AVENUE CHANNEL - GRAND CENTRAL 2: 12' X 4' RCB	700	505	LC21	SW3	0.56	0.20
0014	E	1: 12' X 4' RCB AND 1: 11' X 4' RCB	2440	505	LC21	SW3	0.56	0.20
0060	E	12' X 4' RCB	455	505	LC21	SW3	0.56	0.20
WAPR 0132	E	WASHINGTON AVENUE CHANNEL PARALLEL 2: 9' X 8' RCB	387	1562 ^A	CV1-C ^A	SWSSC	14.95	1.67

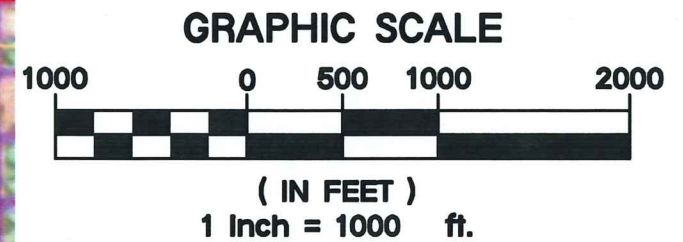
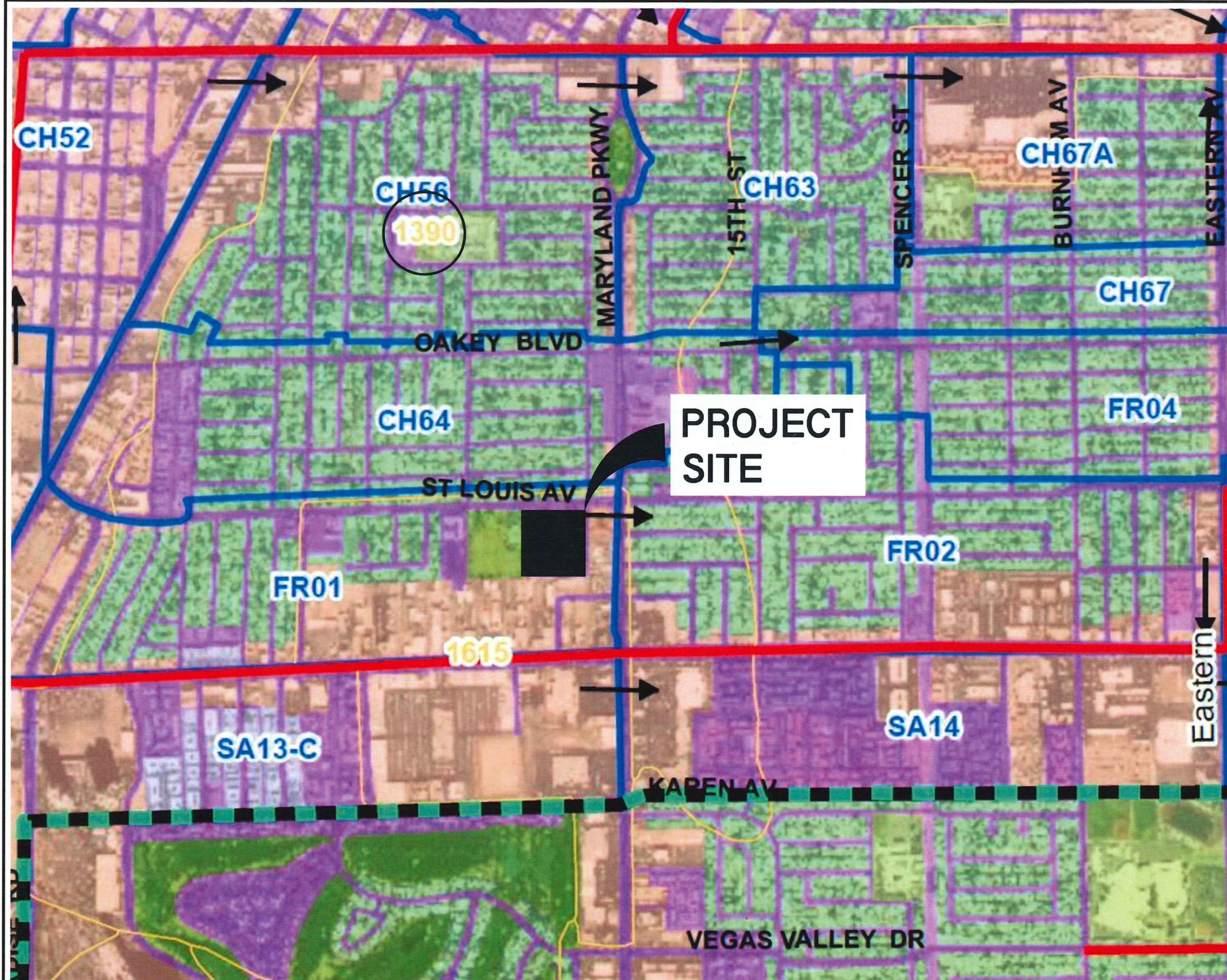


Figure W-5
Central Watershed

Legend

- Flow Arrows
- Concentration Points
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Ultimate Development Boundary
- Watershed
- Subbasins
- Soils
- 1: Undeveloped Land, Open desert
- 2: Parks, Golf Courses
- 3: Rural, 0.5-1 units per acre (uses 1 unit/acre)
- 4: Low-Density Residential, 1-2 units per acre (uses 2 units/acre)
- 5: Medium-Density Residential, 2-4 units per acre (uses 3 units/acre)
- 6: High-Density Residential, 4-8 units per acre (uses 6 units/acre)
- 7: Public Facility and Residential, 8-12 units/acre
- 8: Very High-Density Residential, 12 units/acre or more
- 9: Commercial, Retail, Casino, High Rise Condominiums
- 10: Light Industrial
- 11: Heavy Industrial
- 12: Schools
- 13: Lakes

1390:
100% C-SOIL

DRAWN BY: JMD SCALE: 1"=1000'

CHECKED BY: HMN DATE: 5/13/19

LOCHSA ENGINEERING
6345 SOUTH JONES BLVD., SUITE 100
LAS VEGAS, NV 89118
P: 702 365-9312, F: 702 365-9317

FILE NAME: C-181203-WMAP

LEGEND

FOUND MONUMENTATION ⬮
CENTER LINE — — — — —
ROW LINE — — — — —
EASEMENT LINE — — — — —
SECTION LINE — — — — —
PROPERTY LINE — — — — —
ADJACENT PROPERTY LINE ·······

**FIGURE W-5
CENTRAL WATERSHED**

FREMONT K-8 SCHOOL

PROJECT No.:
181203

SHEET No.

W-5

SHEET 1 OF 1

Response to Comment #6

Revised HEC-1, Standard Form-4, CN Calculation, Avg. Velocity

HEC-1 MODEL OUTPUT

(EXISTING CONDITION)


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1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 10MAY19 TIME 10:56:45
*
*****

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*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

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      X   X XXXXXXX XXXXX   X
      X   X X   X   X   X   XX
      X   X X   X   X   X   X
      XXXXXXX XXXX   X   XXXXX X
      X   X X   X   X   X   X
      X   X X   X   X   X   X
      X   X XXXXXXX XXXXX   XXX

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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1

HEC-1 INPUT

PAGE 1

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1          ID      FREMONT K-8 SCHOOL
2          ID      ***** TECHNICAL DRAINAGE STUDY *****
3          ID      EXISTING CONDITION - ONSITE
4          ID      USING SCS METHODS AND KINEMATIC WAVE ROUTING
5          ID      MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
6          ID
7          ID      LOCHSA JOB # 181203
8          ID
9          ID
10         ID      INPUT FILE NAME: E.DAT
11         ID
12         ID      APRIL 2019
13         ID
14         ID      *****
15         ID      *****
16         ID      MCCARRAN AIRPORT RAINFALL AREA
17         ID      10 & 100 YEAR - 6 HOUR STORM EVENT
18         ID      PRECIPITATION:
19         ID      10-YEAR      : 1.58 INCHES
20         ID      100-YEAR     : 2.77 INCHES
21         ID      10-YEAR/100-YEAR : 1.58/2.77= 0.5704
22         ID
23         ID      *****
24         ID      *****
25         ID      *DIAGRAM
26         ID      IT      5      200
27         ID      IO      5      0
28         ID      IN      5
29         ID      JR      PREC .5704 1.0
30
31         KK      OFD1
32         KM      THE DEVELOPED OFFSITE BASIN FROM BAKER PARK TRAVELING EASTERLY TOWARDS ONSITE
33         PB      2.770
34         PC      0.0 .02 .057 .07 .087 .108 .124 .13 .13 .13
35         PC      .13 .13 .13 .133 .14 .142 .148 .158 .172 .181
36         PC      .19 .197 .199 .2 .201 .204 .214 .229 .241 .249
37         PC      .251 .256 .27 .278 .281 .283 .295 .322 .352 .409
38         PC      .499 .59 .71 .744 .781 .812 .819 .835 .851 .856
39         PC      .86 .868 .876 .888 .91 .926 .937 .95 .97 .976
40         PC      .982 .985 .987 .989 .99 .993 .993 .994 .995 .998
41         PC      .998 .999 1.0
42         BA      .00286
43         LS      0 96.0
44         UD      .114
45         *
46
47         KK      EX2
48         KM      EXISTING ONSITE BASIN TRAVELING NORTHEASTERLY
49         BA      .00625
50         LS      0 98.0
51         UD      0.160
52         *

```

1

HEC-1 INPUT

PAGE 2

```

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
48         KK      CPX1
49         KM      COMBINE OFD1 AND EX2
50         KM      FLOWS EXITING THE PROJECT SITE AT NEC
51         HC      2
52         *
53         KK      EX1
54         KM      ONSITE EXISTING BASIN TRAVELING NORTHEASTERLY
55         BA      .00625
56         LS      0 98.0
57         UD      0.102
58         *

```

57	KK	OFD2
58	KM	EXISTING OFFSITE BASIN TRAVELING NORTHEASTERLY THROUGH THE SUBJECT
59	BA	.00206
60	LS	0 98.0
61	UD	0.097
	*	
62	KK	CPX2
63	KM	COMBINE OFD2 AND EX1
64	KM	TOTAL FLOWS FOR EXISTING ONSITE BASINS AND OFD2
65	HC	2
	*	
66	KK	CPX3
67	KM	COMBINE CPX2 AND CPX1
68	KM	TOTAL FLOWS
69	HC	2
	*	
70	ZZ	

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT	(V) ROUTING	(--->) DIVERSION OR PUMP FLOW
LINE	(.) CONNECTOR	(<---) RETURN OF DIVERTED OR PUMPED FLOW
NO.		
29	OFD1	
	.	
43	.	EX2
	.	
48	CPX1.....	
	.	
52	.	EX1
	.	
57	.	
	.	OFD2
	.	
62	.	CPX2.....
	.	
66	CPX3.....	

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

1*****
 *
 * FLOOD HYDROGRAPH PACKAGE (HEC-1)
 * JUN 1998
 * VERSION 4.1
 *
 * RUN DATE 10MAY19 TIME 10:56:45
 *

 *
 * U.S. ARMY CORPS OF ENGINEERS
 * HYDROLOGIC ENGINEERING CENTER
 * 609 SECOND STREET
 * DAVIS, CALIFORNIA 95616
 * (916) 756-1104
 *

FREMONT K-8 SCHOOL
 ***** TECHNICAL DRAINAGE STUDY *****
 EXISTING CONDITION - ONSITE
 USING SCS METHODS AND KINEMATIC WAVE ROUTING
 MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
 LOCHSA JOB # 181203

INPUT FILE NAME: E.DAT

APRIL 2019

 MCCARRAN AIRPORT RAINFALL AREA
 10 & 100 YEAR - 6 HOUR STORM EVENT
 PRECIPITATION:
 10-YEAR : 1.58 INCHES
 100-YEAR : 2.77 INCHES
 10-YEAR/100-YEAR : 1.58/2.77= 0.5704

26 IO

OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLST	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT

HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1	STARTING DATE
ITIME	0200	STARTING TIME
NQ	101	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1	ENDING DATE
NDTIME	1020	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL	.08 HOURS
TOTAL TIME BASE	8.33 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND

STORAGE VOLUME
SURFACE AREA
TEMPERATURE

ACRE-FEET
ACRES
DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.57 1.00

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO PRECIPITATION	
				RATIO 1 .57	RATIO 2 1.00
HYDROGRAPH AT					
+	OFD1	.00	1 FLOW TIME	3. 3.50	5. 3.50
HYDROGRAPH AT					
+	EX2	.01	1 FLOW TIME	6. 3.58	11. 3.58
2 COMBINED AT					
+	CPX1	.01	1 FLOW TIME	9. 3.58	16. 3.58
HYDROGRAPH AT					
+	EX1	.01	1 FLOW TIME	7. 3.50	12. 3.50
HYDROGRAPH AT					
+	OFD2	.00	1 FLOW TIME	2. 3.50	4. 3.50
2 COMBINED AT					
+	CPX2	.01	1 FLOW TIME	9. 3.50	16. 3.50
2 COMBINED AT					
+	CPX3	.02	1 FLOW TIME	17. 3.50	32. 3.50

*** NORMAL END OF HEC-1 ***

HEC-1 MODEL OUTPUT

(INTERIM/DEVELOPED CONDITION)


```

1*****
*
* FLOOD HYDROGRAPH PACKAGE (HEC-1)
* JUN 1998
* VERSION 4.1
*
* RUN DATE 10MAY19 TIME 13:47:49
*
*****

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*****
*
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET
* DAVIS, CALIFORNIA 95616
* (916) 756-1104
*
*****

```

```

X X XXXXXXX XXXXX X
X X X X X XX
X X X X X X
XXXXXXX XXXX X XXXXX X
X X X X X X
X X X X X
X X XXXXXXX XXXXX XXX

```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE, SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
1 ID FREMONT K-8 SCHOOL
2 ID ***** TECHNICAL DRAINAGE STUDY *****
3 ID INTERIM / DEVELOPED CONDITION - ONSITE
4 ID USING SCS METHODS AND KINEMATIC WAVE ROUTING
5 ID MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION
6 ID
7 ID LOCHSA JOB # 181203
8 ID
9 ID
10 ID INPUT FILE NAME: D.DAT
11 ID
12 ID MAY 2019
13 ID
14 ID *****
15 ID *****
16 ID MCCARRAN AIRPORT RAINFALL AREA
17 ID 10 & 100 YEAR - 6 HOUR STORM EVENT
18 ID PRECIPITATION:
19 ID 10-YEAR : 1.58 INCHES
20 ID 100-YEAR : 2.77 INCHES
21 ID 10-YEAR/100-YEAR : 1.58/2.77= 0.5704
22 ID
23 ID *****
24 ID *****
25 ID *DIAGRAM
26 ID IT 5 200
27 ID IO 5 0
28 ID IN 5
29 ID JR PREC .5704 1.0
30
31 KK OFD1
32 KM THE DEVELOPED OFFSITE BASIN FROM BAKER PARK TRAVELING EASTERLY TOWARDS ONSITE
33 PB 2.770
34 PC 0.0 .02 .057 .07 .087 .108 .124 .13 .13 .13
35 PC .13 .13 .13 .133 .14 .142 .148 .158 .172 .181
36 PC .19 .197 .199 .2 .201 .204 .214 .229 .241 .249
37 PC .251 .256 .27 .278 .281 .283 .295 .322 .352 .409
38 PC .499 .59 .71 .744 .781 .812 .819 .835 .851 .856
39 PC .86 .868 .876 .888 .91 .926 .937 .95 .97 .976
40 PC .982 .985 .987 .989 .99 .993 .993 .994 .995 .998
41 PC .998 .999 1.0
42 BA .00286
43 LS 0 96.0
44 UD .114
45 *
46
47 KK OND1
48 KM ONSITE BASIN TRAVELING NORTHERLY
49 BA .00595
50 LS 0 98.0
51 UD 0.115
52 *

```

1 HEC-1 INPUT PAGE 2

```

LINE ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
48 KK OFD2
49 KM OFFSITE BASIN TRAVELING NORTHEASTERLY THROUGH THE SUBJECT SITE
50 BA .00206
51 LS 0 98.0
52 UD 0.097
53 *
54
55 KK CPD1
56 KM COMBINE OND1, OFD1 AND OFD2
57 KM FLOWS EXITING THE PROJECT SITE AT NEC
58 HC 3
59 *

```

57	KK	OND2	
58	KM	ONSITE	BASIN TRAVELING EASTERLY AND THEN NORTHERLY
59	BA	.00331	
60	LS	0	98.0
61	UD	0.082	
	*		
62	KK	OND3	
63	KM	ONSITE	BASIN TRAVELING EASTERLY AND THEN NORTHERLY
64	BA	.00323	
65	LS	0	98.0
66	UD	0.104	
	*		
67	KK	CPD2	
68	KM	COMBINE OND2 AND OND3 WITH CPD1	
69	KM	TOTAL FLOWS FOR ONSITE	
70	HC	3	
	*		
71	ZZ		

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT LINE (V) ROUTING (--->) DIVERSION OR PUMP FLOW

NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW

```

29   OFD1
    .
43   .      OND1
    .      .
48   .      .      OFD2
    .      .      .
53   CPD1.....
    .
57   .      OND2
    .      .
62   .      .      OND3
    .      .      .
67   CPD2.....
  
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

* FLOOD HYDROGRAPH PACKAGE (HEC-1) *

* JUN 1998 *

* VERSION 4.1 *

* RUN DATE 10MAY19 TIME 13:47:49 *

* U.S. ARMY CORPS OF ENGINEERS *

* HYDROLOGIC ENGINEERING CENTER *

* 609 SECOND STREET *

* DAVIS, CALIFORNIA 95616 *

* (916) 756-1104 *

FREMONT K-8 SCHOOL

***** TECHNICAL DRAINAGE STUDY *****

INTERIM / DEVELOPED CONDITION - ONSITE

USING SCS METHODS AND KINEMATIC WAVE ROUTING

MASTER PLAN ADJUSTED 6-HOUR RAINFALL AND STORM DISTRIBUTION

LOCHSA JOB # 181203

INPUT FILE NAME: D.DAT

MAY 2019

MCCARRAN AIRPORT RAINFALL AREA

10 & 100 YEAR - 6 HOUR STORM EVENT

PRECIPITATION:

10-YEAR : 1.58 INCHES

100-YEAR : 2.77 INCHES

10-YEAR/100-YEAR : 1.58/2.77= 0.5704

26 10

OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT

HYDROGRAPH TIME DATA

NMIN	5	MINUTES IN COMPUTATION INTERVAL
IDATE	1	STARTING DATE
ITIME	0200	STARTING TIME
NQ	101	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1	ENDING DATE
NDTIME	1020	ENDING TIME
ICENT	19	CENTURY MARK

COMPUTATION INTERVAL	.08 HOURS
TOTAL TIME BASE	8.33 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET

FLOW
STORAGE VOLUME
SURFACE AREA
TEMPERATURE

CUBIC FEET PER SECOND
ACRE-FEET
ACRES
DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.57 1.00

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION	
					RATIO 1 .57	RATIO 2 1.00
HYDROGRAPH AT						
+	OFD1	.00	1	FLOW TIME	3. 3.50	5. 3.50
HYDROGRAPH AT						
+	OND1	.01	1	FLOW TIME	6. 3.50	11. 3.50
HYDROGRAPH AT						
+	OFD2	.00	1	FLOW TIME	2. 3.50	4. 3.50
3 COMBINED AT						
+	CPD1	.01	1	FLOW TIME	11. 3.50	21. 3.50
HYDROGRAPH AT						
+	OND2	.00	1	FLOW TIME	4. 3.50	7. 3.50
HYDROGRAPH AT						
+	OND3	.00	1	FLOW TIME	4. 3.50	6. 3.50
3 COMBINED AT						
+	CPD2	.02	1	FLOW TIME	19. 3.50	34. 3.50

*** NORMAL END OF HEC-1 ***

FREMONT K-8 SCHOOL
AB
181203

181203

ti = 1.8 (1.1 - K) L^(0.5) / S^(1/3)	tc = ti + tt	LOCATION:	Onsite & Offsite
K = 0.0132 CN - 0.39	tl= tLAG = 0.6 tc	HYDROLOGIC CONDITION:	Existing/Developed
tt = L / (60 V)		TRIAL:	Final Iteration

Curve Number Calculations
FREMONT K-8 SCHOOL

Sub-Basin: OFD2
Total Area: 1.32 Acres

Land Use/Cover type	Area [A] (acres)	Soil Type	Percentage, P [P]	Crueve Number [CN]	Product {CN x P}
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)	1.32	C	100%	98	98.0
Total:	1.32	-	100%	-	98.0

AVERAGE VELOCITY

Input Variables		Basin OND1	Basin OND2	Basin OND3	Basin OFD1	Basin EX1	Basin EX2	Basin OFD2											
Bottom Width, B, (ft):		2.0	2.0	35.0	10.0	2.0	20.0	10.0											
Right Side Slope, Zr:		0	50	100	200	50	200	200											
Left Side Slope, Zl:		50	0	100	200	0	200	200											
Manning's n:		0.015	0.015	0.015	0.015	0.015	0.015	0.015											
Geometric Slope, So (ft/ft):		0.006	0.008	0.004	0.008	0.008	0.007	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Flowrate, Q (cfs):		5.5	3.5	3	2.5	6	5.5	2											
Output Variables																			
Normal Depth, Yn (ft):		0.28	0.22	0.07	0.08	0.28	0.10	0.07											
Area of Flow, A, (sf):		2.47	1.63	3.05	2.10	2.44	4.04	1.85											
Velocity, V (fps):		2.22	2.14	0.98	1.19	2.46	1.36	1.08											
Wetted Perimeter, p (ft):		16.13	13.16	49.45	42.22	16.04	60.25	39.74											
Hydraulic Radius, Rh (ft):		0.15	0.12	0.06	0.05	0.15	0.07	0.05											
Free Surface Top Width, T (ft):		15.85	12.94	49.45	42.22	15.76	60.25	39.74											
Centroid, Y*, (ft):		0.10	0.08	0.03	0.03	0.10	0.04	0.03											

* NOTE : HALF OF THE 100-YEAR STORM RUNOFF FLOWS IS USED TO DETERMINE THE BASIN TRAVEL VELOCITY REQUIRED FOR THE LAG TIME CALCULATIONS

Response to Comment #8

Hydraulic Calculation for the Berm and Copy of the E-mail

Flow Capacity along the Berm Worksheet for Irregular Channel

Project Description	
Worksheet	flow capacity along the t
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data	
Slope	.011000 ft/ft
Water Surface Elev	5.35 ft

← SAME SLOPE USED FOR ST. LOUIS AVE SEC. 'A'
← 5.29 IS BACK OF SIDEWALK + 0.06' DEPTH = 5.35'

Options	
Current Roughness Method	Lotter's Method
Open Channel Weighting	Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coeff	0.014
Elevation Range	5.19 to 6.87
Discharge	1.31 cfs
Flow Area	0.6 ft ²
Wetted Perimeter	5.76 ft
Top Width	5.59 ft
Actual Depth	0.16 ft
Critical Elevation	5.37 ft
Critical Slope	0.006493 ft/ft
Velocity	2.30 ft/s
Velocity Head	0.08 ft
Specific Energy	5.43 ft
Froude Number	1.27
Flow Type	supercritical

← NON-EROSIVE

Calculation Messages:
Water elevation exceeds lowest end station by 0.16 ft.

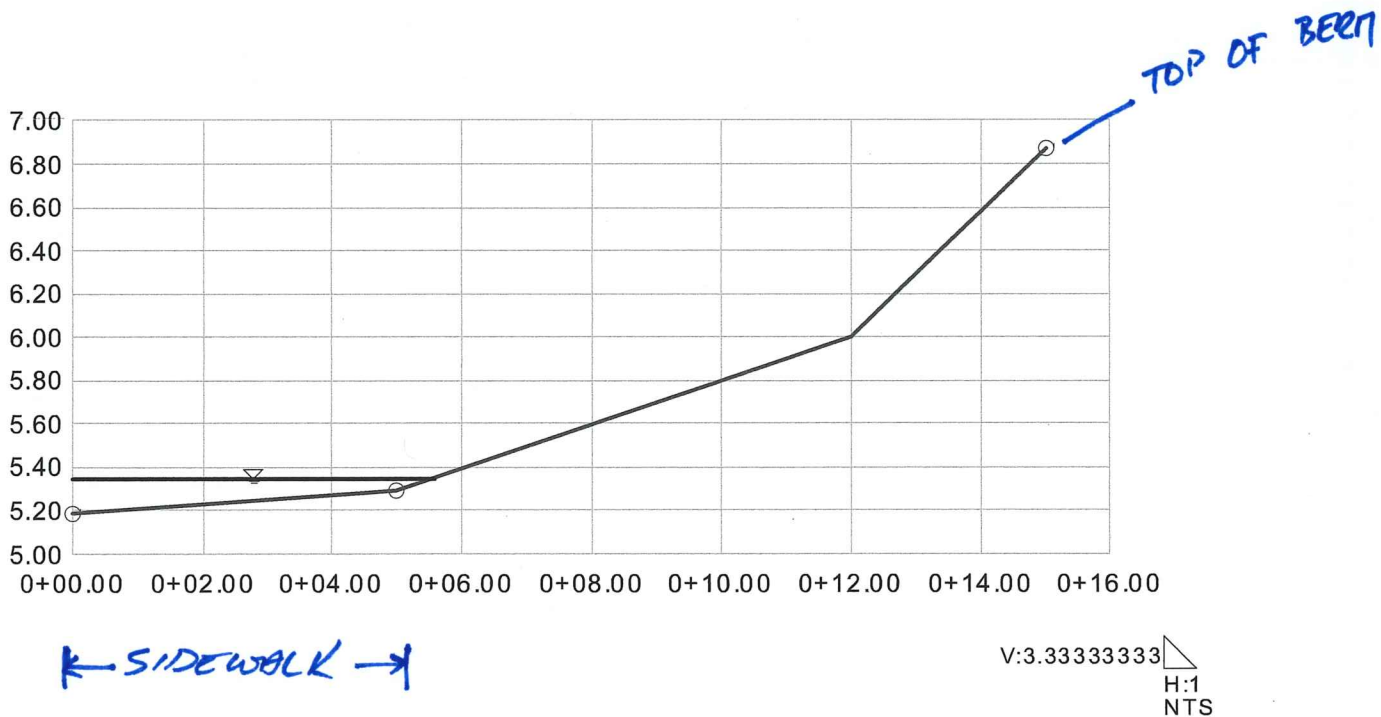
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+05.00	0.013
0+05.00	0+15.00	0.025

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	5.19
0+05.00	5.29
0+12.00	6.00
0+15.00	6.87

Flow Capacity along the Berm Cross Section for Irregular Channel

Project Description	
Worksheet	flow capacity along the t
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data	
Mannings Coefficient	0.014
Slope	0.011000 ft/ft
Water Surface Elev	5.35 ft
Elevation Range	.19 to 6.87
Discharge	1.31 cfs



St Louis Avenue - full street Section (100-yr) **Worksheet for Irregular Channel**

Project Description	
Worksheet	St Louis Avenue (Full St)
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	011000 ft/ft
Discharge	220.00 cfs

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.016
Water Surface Elev	5.35 ft
Elevation Range	4.09 to 5.67
Flow Area	33.8 ft²
Wetted Perimeter	64.47 ft
Top Width	62.00 ft
Actual Depth	1.26 ft
Critical Elevation	5.54 ft
Critical Slope	0.004193 ft/ft
Velocity	6.51 ft/s
Velocity Head	0.66 ft
Specific Energy	6.01 ft
Froude Number	1.55
Flow Type	Supercritical

→ REF. FROM 'CLV CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN'

WSE = 5.35

← d₁₀₀

← V₁₀₀

$V \times D = 6.51 \times 1.26 = 8.2 > 8$

$V \times D = 6.51 \times 0.66 = 4.30 < \underline{8}$: on our side ✓

Calculation Messages:
 Water elevation exceeds lowest end station by 0.76297464 ft.
 Flow is divided.

Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+02.00	0.013
0+02.00	0+36.00	0.016
0+36.00	0+39.00	0.013
0+39.00	0+63.00	0.016
0+63.00	0+65.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	4.59
0+00.50	4.59
0+00.50	4.09
0+02.00	4.22
0+02.00	4.26

St Louis Avenue - full street Section (100-yr)
Worksheet for Irregular Channel

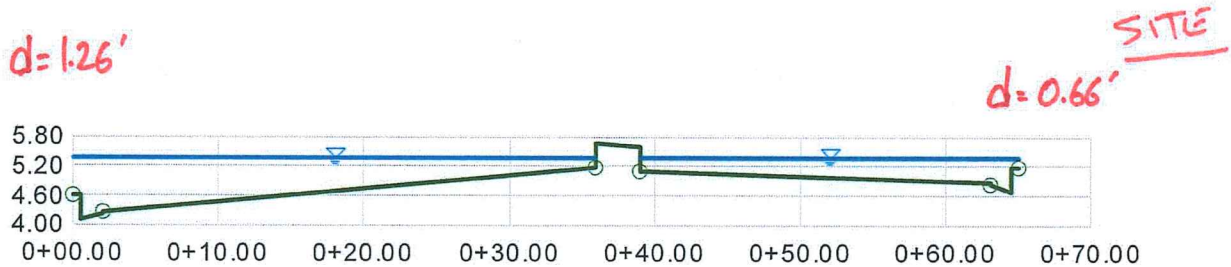
Natural Channel Points	
Station (ft)	Elevation (ft)
0+36.00	5.17
0+36.00	5.67
0+39.00	5.60
0+39.00	5.10
0+63.00	4.86
0+63.00	4.82
0+64.50	4.69
0+64.50	5.19
0+65.00	5.19



St Louis Avenue - full street Section (100-yr) Cross Section for Irregular Channel

Project Description	
Worksheet	St Louis Avenue (Full St
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.016
Slope	0.011000 ft/ft
Water Surface Elev	5.35 ft
Elevation Range	.09 to 5.67
Discharge	220.00 cfs



V:3.33333333
H:1
NTS

Copy of the E-Mail

Abdul Bakhshi

From: Albert Sung <YSung@LasVegasNevada.GOV>
Sent: Tuesday, May 14, 2019 5:45 PM
To: Abdul Bakhshi
Subject: RE: Fremont K-8 School (DS# 5124A)

Abdul,

- 1) Prove to me that the 0.06' portion of the flow in St. Louis Avenue is below 5ft/s, then you do not need to armor the berm.
- 2) Sump pump is costly to maintain and repair. Can you get a letter from the school official that they acknowledge the potential burden of maintaining a sump pump system?

Albert Y. Sung

Project Engineer
Public Works Dept. / Flood Control

(702) 229-6541

333 N. Rancho Dr. 7th Floor
Las Vegas, NV 89106



lasvegasnevada.gov



Your opinion is important! Click [here](#) to take a short survey.

From: Abdul Bakhshi <Abdul.Bakhshi@lochsa.com>
Sent: Tuesday, May 14, 2019 3:25 PM
To: Albert Sung <YSung@LasVegasNevada.GOV>
Cc: Hani Noshi <Hani@lochsa.com>
Subject: Fremont K-8 School (DS# 5124A)

EXTERNAL EMAIL

Hello Albert,

Hope all is well, I had a couple of questions that needs a bit more clarification regarding your comments (below) for the Fremont School.

8. A berm is provided at the back of sidewalk in *St. Louis Avenue* for onsite flood protection. The 100-year flow velocity in *St. Louis* is 6.5 ft/s which is erosive. Provide erosion protection measures on the side of the berm facing the street. Revise the plans, construction callout and *Detail Sections A/C6.02* and *B/C6.02* accordingly.

The flow depth along St. Louis avenue is 0.66ft and a velocity of 6.51ft/sec. Therefore, only 0.06ft would be against the berm. I believe this minimal depth against the berm will not introduce protentional for erosion .

Do you agree or do you still want us to provide erosion protection along the entire berm?

10. The proposed onsite storm drain is a bubbler system. Provide a bleeder line to release the residual water in the inlet.

If bleeder line is not possible, the engineer should consider raising the finished floor elevations and provide gravity flow in the courtyard area with or without a storm drain system.

Address and resolve in the next submittal.

In the original submittal we provided a sump pump for the bubbler system per "Storm Drain Construction Note #3" in the grading plan. Construction Note #3 specifically calls out the installation of a 4ft x 4ft Jensen drop inlet with a sump pump by others. Thus, the sump pump provides the bleeder for the system.

If you can provide some clarification on this matter

Thanks

Response to Comment #9

Over Flow Hydraulic Sections 'OF1' and 'OF2'

Over Flow Hydraulic Section @ 'OV1'

Worksheet for Irregular Channel

Project Description	
Worksheet	hydraulic section 'O
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	005427 ft/ft
Discharge	3.50 cfs

Options	
Current Roughness Method	over Lotter's Method
Open Channel Weighting	over Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.013
Water Surface Elev	3.51 ft
Elevation Range	.32 to 4.58
Flow Area	2.0 ft ²
Wetted Perimeter	21.58 ft
Top Width	21.58 ft
Actual Depth	0.19 ft
Critical Elevation	3.51 ft
Critical Slope	0.005427 ft/ft
Velocity	1.73 ft/s
Velocity Head	0.05 ft
Specific Energy	3.55 ft
Froude Number	1.00
Flow Type	Subcritical

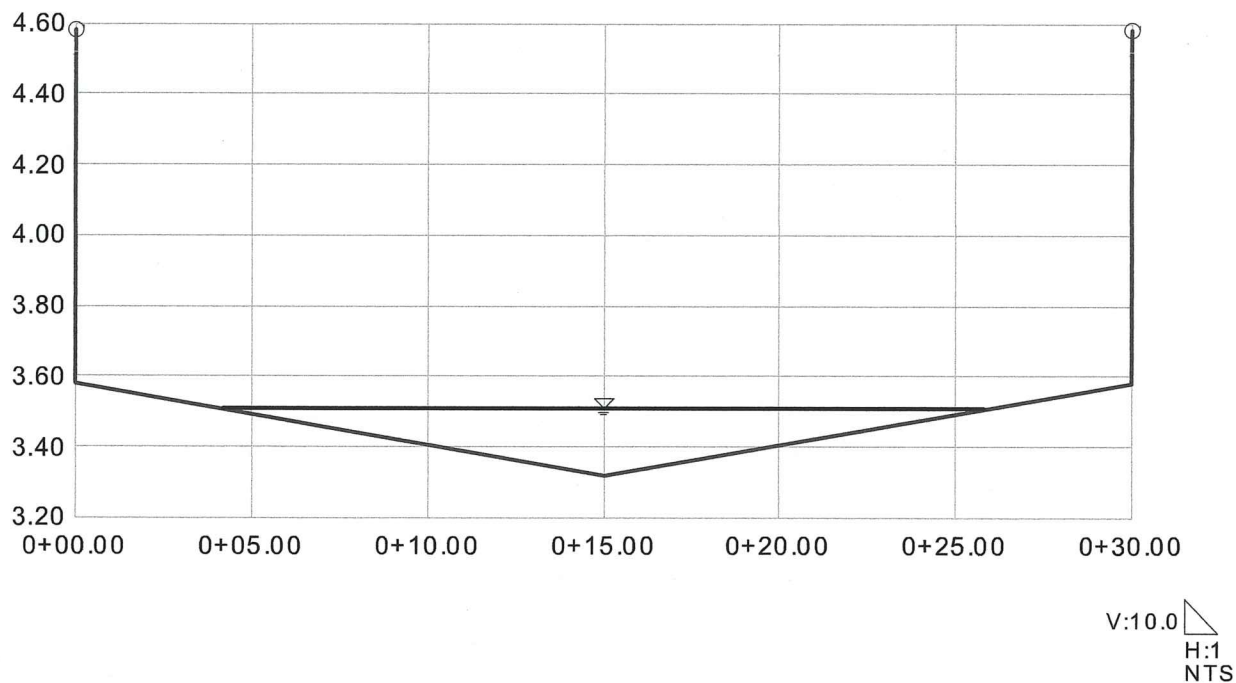
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+30.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	4.58
0+00.00	3.58
0+15.00	3.32
0+30.00	3.58
0+30.00	4.58

Over Flow Hydraulic Section @ 'OV1'
Cross Section for Irregular Channel

Project Description	
Worksheet	hydraulic section 'O
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.013
Slope	0.005427 ft/ft
Water Surface Elev	3.51 ft
Elevation Range	.32 to 4.58
Discharge	3.50 cfs



Over Flow Hydraulic Section @ 'OV2'

Worksheet for Irregular Channel

Project Description	
Worksheet	Hydraulic Section 'C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data	
Slope	006121 ft/ft
Discharge	2.50 cfs

Options	
Current Roughness Method	oved Lotter's Method
Open Channel Weighting	oved Lotter's Method
Closed Channel Weighting	Horton's Method

Results	
Mannings Coefficient	0.013
Water Surface Elev	3.52 ft
Elevation Range	3.38 to 4.58
Flow Area	1.7 ft ²
Wetted Perimeter	26.49 ft
Top Width	26.48 ft
Actual Depth	0.14 ft
Critical Elevation	3.52 ft
Critical Slope	0.006121 ft/ft
Velocity	1.45 ft/s
Velocity Head	0.03 ft
Specific Energy	3.56 ft
Froude Number	1.00
Flow Type	Supercritical

Calculation Messages:
Flow is divided.

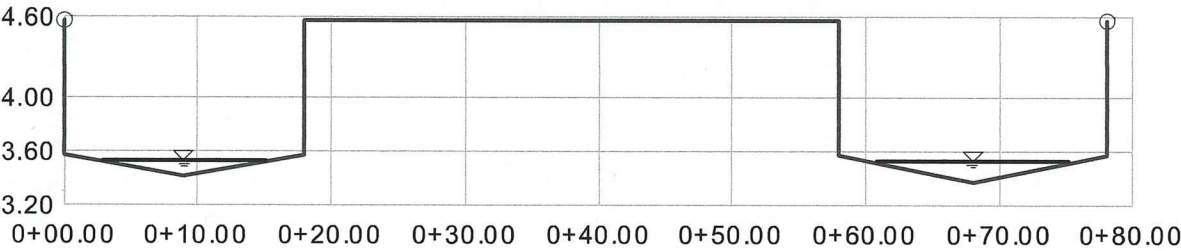
Roughness Segments		
Start Station	End Station	Mannings Coefficient
0+00.00	0+78.00	0.013

Natural Channel Points	
Station (ft)	Elevation (ft)
0+00.00	4.58
0+00.00	3.58
0+09.00	3.41
0+18.00	3.58
0+18.00	4.58
0+58.00	4.58
0+58.00	3.58
0+68.00	3.38
0+78.00	3.58
0+78.00	4.58

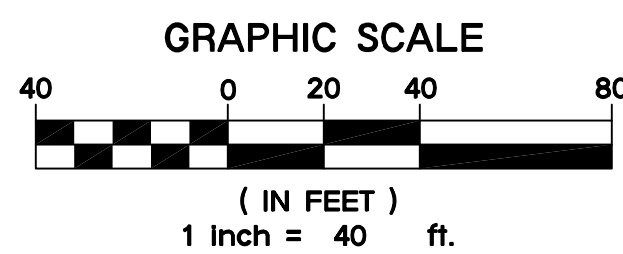
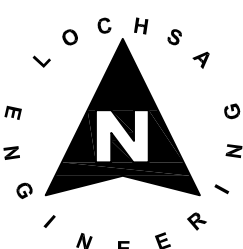
Over Flow Hydraulic Section @ 'OV2'
Cross Section for Irregular Channel

Project Description	
Worksheet	Hydraulic Section 'C
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data	
Mannings Coefficient	0.013
Slope	0.006121 ft/ft
Water Surface Elev	3.52 ft
Elevation Range	.38 to 4.58
Discharge	2.50 cfs



V:10.0
H:1
NTS



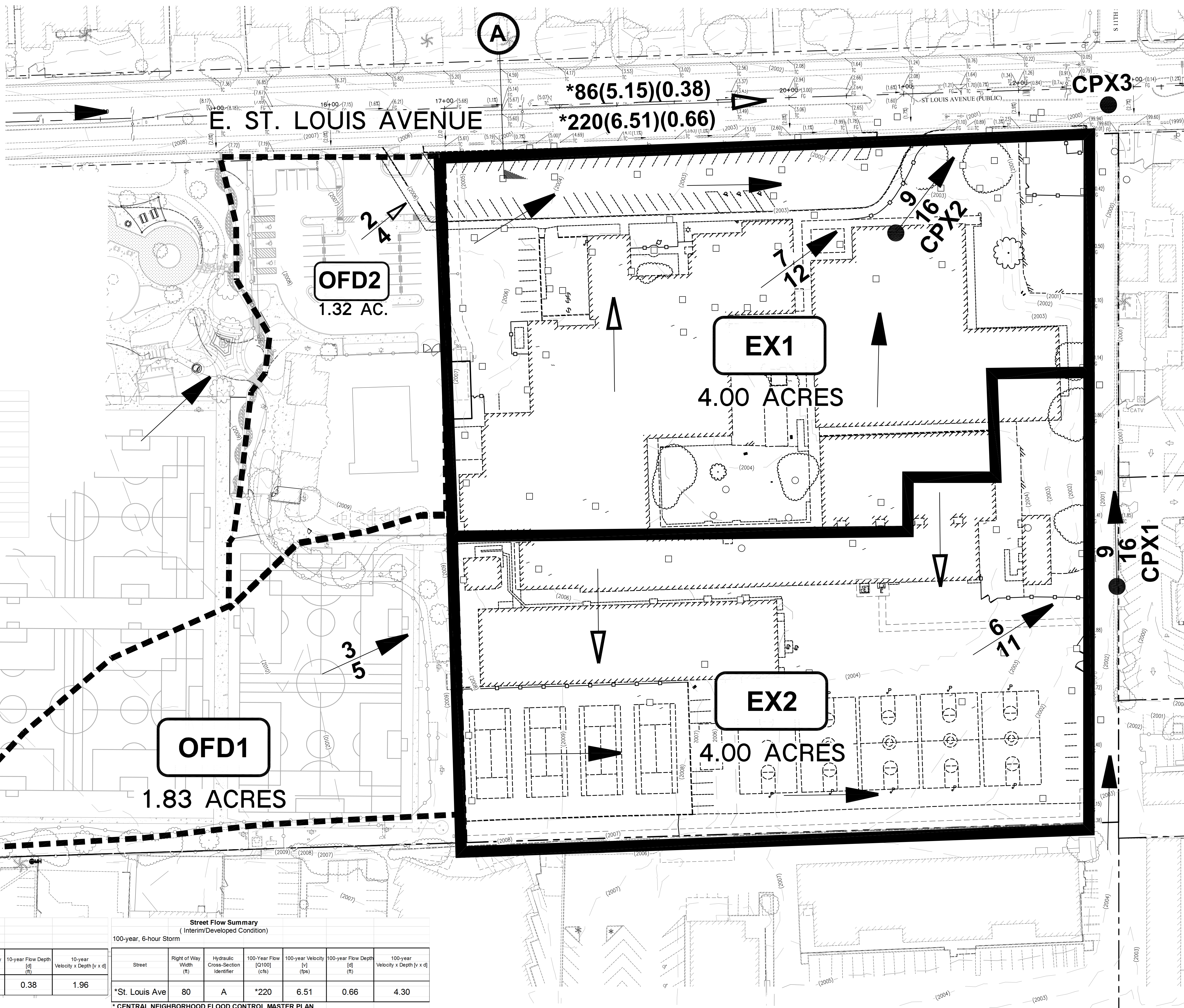
DRAINAGE LEGEND	
ND1	DRAINAGE BASIN LABEL
CPX1	CONCENTRATION POINT COMBINATION POINT
---	ONSITE BASIN BOUNDARY
---	OFFSITE BASIN BOUNDARY
Q10	FLOW IN QFS (INTERM)
Q100	FLOW IN QFS (INTERM)
X (X)(XX)	Q10 (V10)(D10)
X (X)(XX)	Q100 (V100)(D100)
→	BASIN FLOW DIRECTION
→	COMBINED FLOW DIRECTION
A	HYDRAULIC CROSS-SECTION

Peak Flow Summary			
Existing Condition			
HEC-1 ID.	Area (acres)	10-year Flow (cfs)	100-year Flow (cfs)
OFD1	1.83	3	5
EX2	4.00	6	11
CPX1	-	9	16
EX1	4.00	7	12
OFD2	1.32	2	4
CPX2	-	9	16
CPX3	-	17	32
		(OFD1+EX2)	
		(OFD2+EX1)	
		(CPX1+CPX2)	

Street Flow Summary (Interim/Developed Condition)						
10-year, 6-hour Storm						
Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	10-year Flow [Q10] (cfs)	10-year Velocity [V] (fps)	10-year Flow Depth [d] (ft)	10-year Velocity x Depth [v x d]
*St. Louis Ave	80	A	*86	5.15	0.38	1.96

Street Flow Summary (Interim/Developed Condition)						
100-year, 6-hour Storm						
Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	100-year Flow [Q100] (cfs)	100-year Velocity [V] (fps)	100-year Flow Depth [d] (ft)	100-year Velocity x Depth [v x d]
*St. Louis Ave	80	A	*220	6.51	0.66	4.30

* CENTRAL NEIGHBORHOOD FLOOD CONTROL MASTER PLAN



REVISIONS:

REV.	DESCRIPTION	DATE

SEAL: **TED T. EGERTON**
CIVIL
No. 11286
Exp. 12-31-20

DATE: 05/16/19
DRAWN BY: MWT
SUBMITTAL: 181203
A/E PROJECT NO. 181203

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Las Vegas, Nevada 89119
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www.simpsoncoulter.com

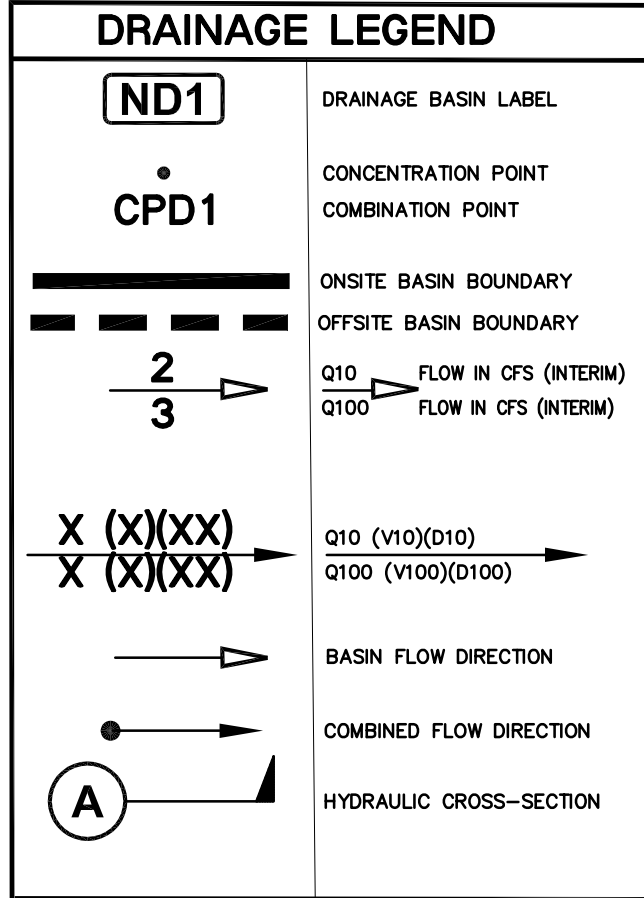
Lochsa Engineering
6345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone (702) 365-9312
Fax (702) 365-9317
www.lochsa.com

CONSTRUCTION MGMT:
PROJECT MANAGER:
COORDINATOR:
BUILDING DEPARTMENT:
CODE COMPLIANCE:
ASBESTOS WORK IS:
REQUIRED ☐ NOT REQUIRED ☐
JOB# XXXXXXXX

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION DEPARTMENT 1180 MILITARY TRIBUTE PL. HENDERSON NV 89074 PHONE: 702-795-8710

PROJECT: **FREMONT K-8 SCHOOL**
DRAWING TITLE: **EXISTING CONDITION BASIN MAP**
FACILITY:

SHEET NO: **DR1**
SHEET 1 OF 1

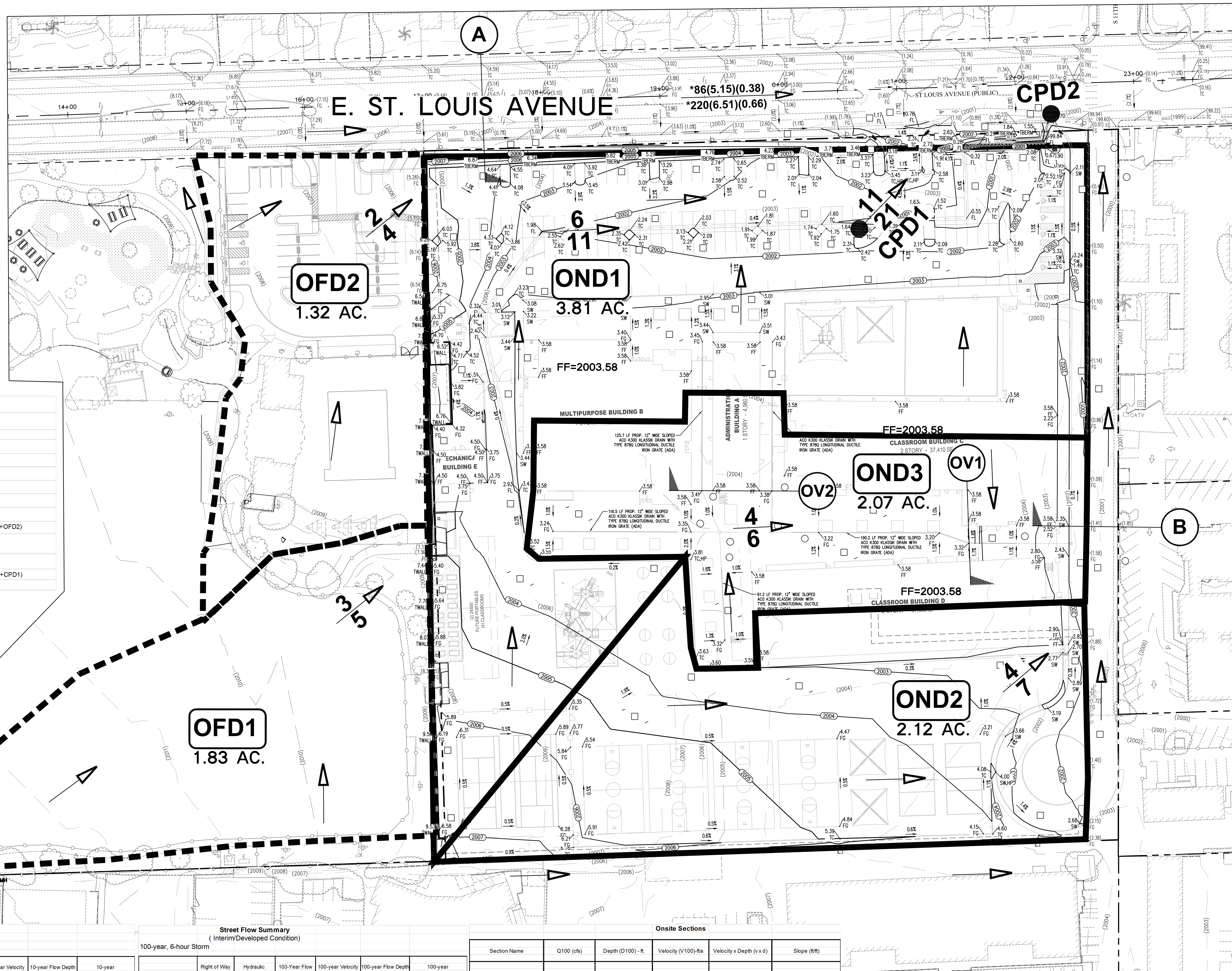


Peak Flow Summary			
Interim/Development Condition			
HEC-1 ID.	Area (acres)	100-year Flow (cfs)	100-year Flow (cfs)
OFD1	1.83	3	5
OND1	3.81	6	11
OFD2	1.32	2	4
CPD1	-	11	21
(OFD1+OND1+OFD2)			
OND2	2.12	4	7
OND3	2.07	4	6
CPD2	-	19	34
(OND2+OND3+CPD1)			

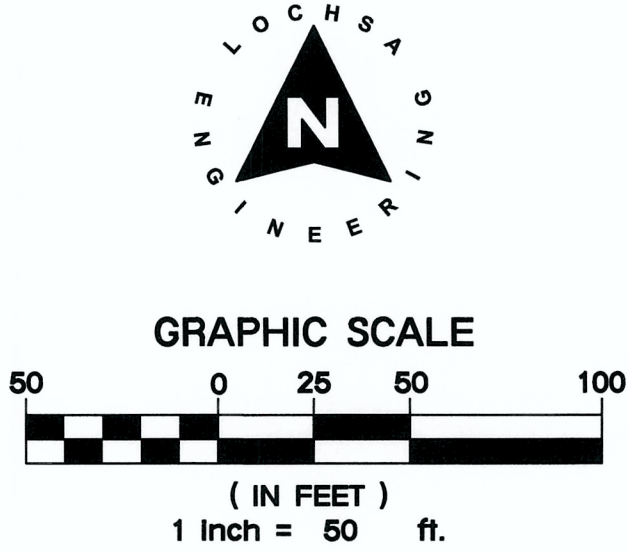
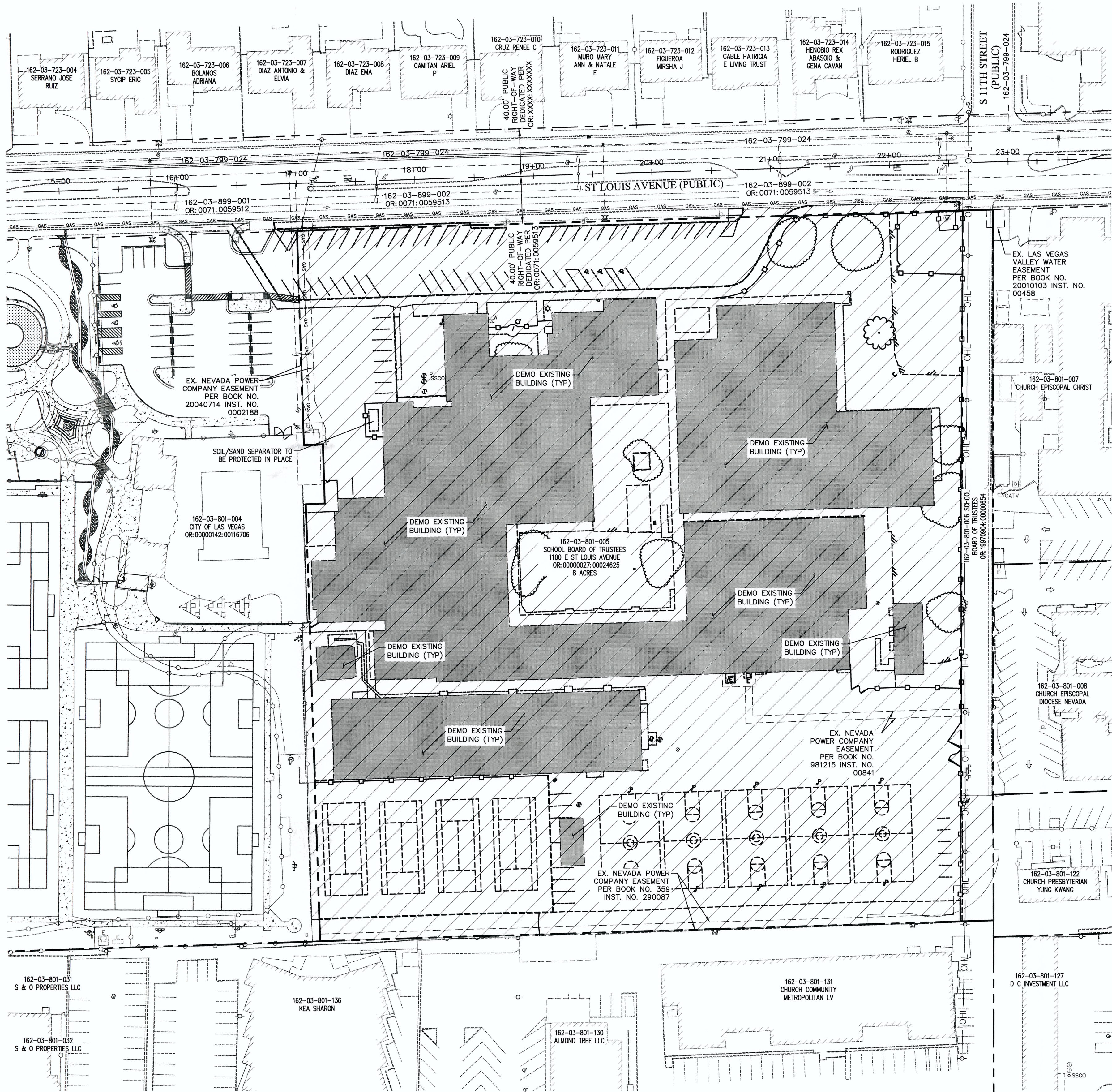
Street Flow Summary (Interim/Developed Condition)						
10-year, 6-hour Storm						
Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	10-Year Flow (cfs)	10-year Velocity (ft/s)	10-year Flow Depth (ft)	10-year Velocity x Depth [v x d]
*St. Louis Ave	80	A	*86	5.15	0.38	1.96

Street Flow Summary (Interim/Developed Condition)						
100-year, 6-hour Storm						
Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	100-Year Flow [Q100] (cfs)	100-year Velocity [V] (fps)	100-year Flow Depth [d] (ft)	100-year Velocity x Depth [v x d] (ft ² /s)
*St. Louis Ave	80	A	*220	6.51	0.66	4.30

		Onsite Sections			
Section Name	Q100 (cfs)	Depth (D100) - ft	Velocity (V100)-ft/s	Velocity x Depth (v x d)	Slope (ft/ft)
B	7	0.2	1.94	0.39	0.007

[illegible]

5/16/2019 4:13 PM
T:\CAP\181203\Drawings\Drawings\DR2.dwg



DEMOLITION NOTES

1. REMOVE ALL BUILDINGS AND APPURTENANCES WITHIN THE HATCH ZONE AREA.
2. ALL EXISTING WATERMAIN LOCATED IN THE HATCH REMOVAL ZONE AREA TO BE REMOVED TO THE BACKFLOW DEVICE.

BASIS OF BEARINGS:

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS AND LAS VEGAS HIGH ELEVATION ZONES, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

ZONE: LAS VEGAS ELEVATION ZONE

DATUM (REFERENCE FRAME): NAD 1983(2011) EPOCH 2010.0

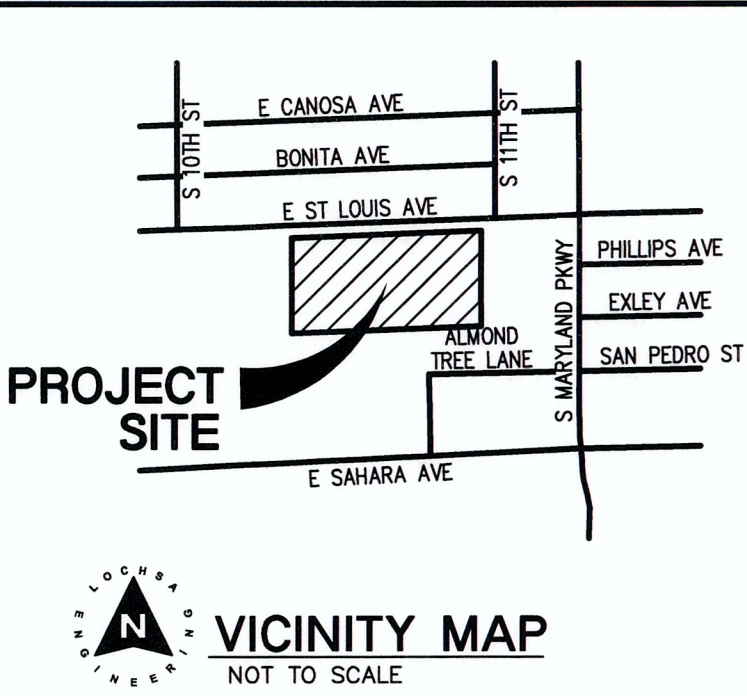
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

PROJECTION: TRANSVERSE MERCATOR

STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
NORTHING AT GRID ORIGIN: 200,000.00 M (656,166.6667 FEET US)
EASTING AT CENTRAL MERIDIAN: 100,000.00 M (328,083.3333 FEET US)
SCALE FACTOR ON CENTRAL MERIDIAN: 1.0001 (EXACT)

NOTES:

1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
2. GRID BEARING SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARING DUE TO MERIDIAN CONVERGENCE.



REVISIONS:		
REV.	DESCRIPTION	DATE

SEAL
PROFESSIONAL ENGINEER - STATE OF NEVADA
TED BERGERON
CIVIL
No. 11286
EXPIRATION DATE: 05-16-2019

DATE: 05/16/19
DRAWN BY: MWT
SUBMITTAL: A/E PROJECT NO. 181203

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Las Vegas, Nevada 89119
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Lochsa Engineering
Phone (702) 365-8912
Fax (702) 365-9317
www.lochsa.com

CONSTRUCTION MGMT:		DATE:
PROJECT MANAGER:		
COORDINATOR:		
BUILDING DEPARTMENT:		
CODE COMPLIANCE:		
ASHERA REVIEW:		
ASBESTOS WORK IS:		
REQUIRED	☐	NOT REQUIRED ☐
JOB#	XXXXXXX	

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

OVERALL DEMOLITION PLAN
PROJECT: ---
DRAWING TITLE: OVERALL DEMOLITION PLAN
FACILITY: FREMONT K-8 SCHOOL MPID #1623

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34) BC		⊙	⊙ = SANITARY SEWER ⊙ = STORM DRAIN ⊙ = ELECTRICAL ⊙ = TELEPHONE	⊙	⊙	▷	○	□	⊙	⊙	⊙
ROW LINE	SCARP LINE	PROPOSED:	(2122)										⊙							⊙	⊙	⊙

LEGEND

CL OR SURVEY LINE
PROPERTY LINE
ROW LINE

EASEMENT LINE
SAWCUT LINE
SCARP LINE

DESCRIPTION:
EXISTING:
PROPOSED:

CONTOUR LINES
(2210)
(2122)

EDGE OF PAVEMENT

"A" TYPE CURBS

"L" TYPE CURBS

WALLS

FENCES

AC PAVEMENT

CONCRETE

SPOT ELEVATIONS
(12.34) BC
(12.34) BC

SIGNS

MANHOLE W/ DESCRIPTION
⊙
⊙

MANHOLE DESCRIPTIONS
⊙ = SANITARY SEWER
⊙ = STORM DRAIN
⊙ = ELECTRICAL
⊙ = TELEPHONE

FIRE HYDRANTS
⊙

GATE VALVES
⊙

REDUCERS
▷

CLEAN OUTS
○

UTILITY BOX OR VAULT
□

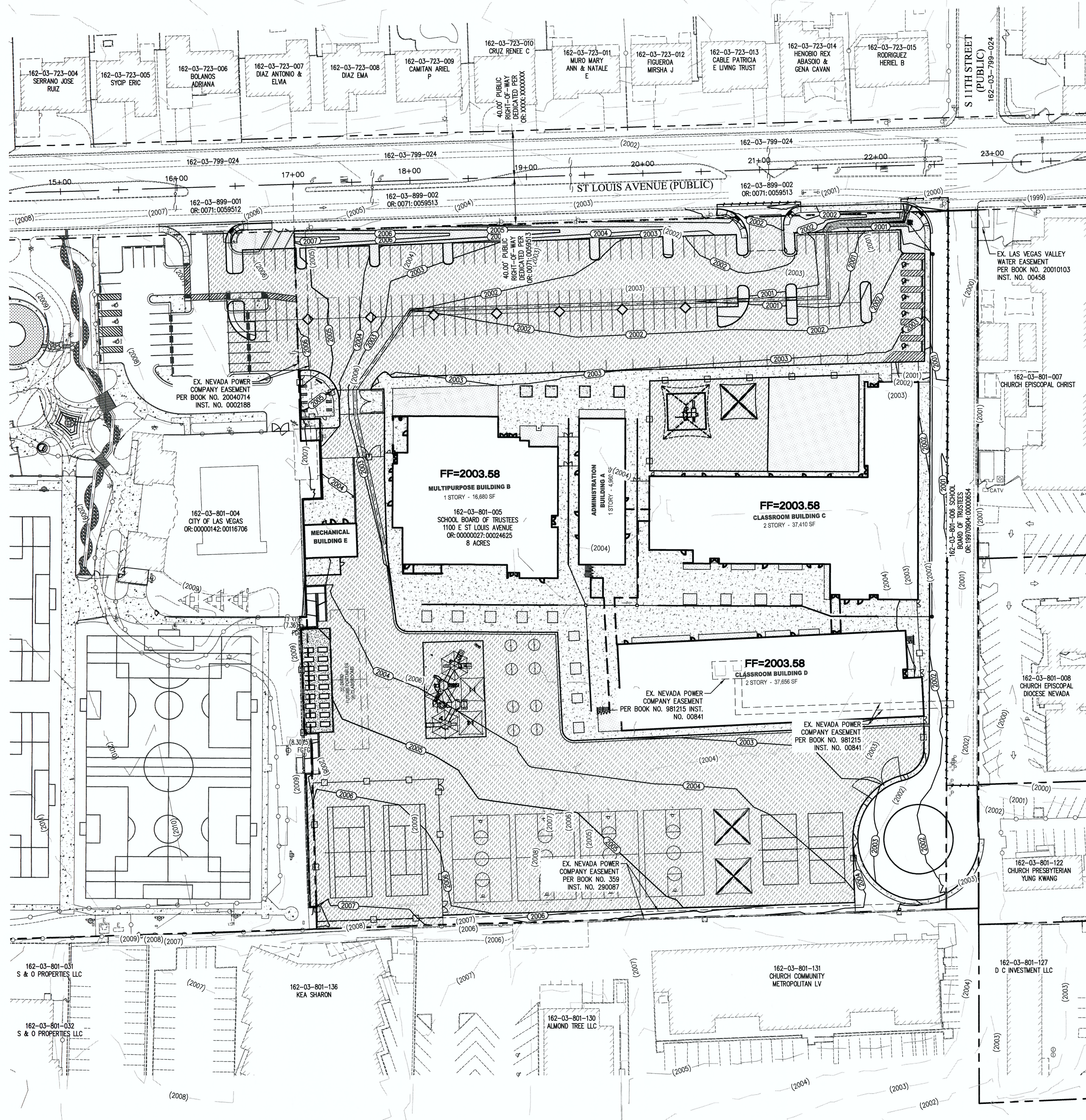
BACKWATER VALVES
⊙
⊙

100w HPS STREETLIGHTS
⊙
⊙

150w HPS STREETLIGHTS
⊙
⊙

SHEET NO: C2.00

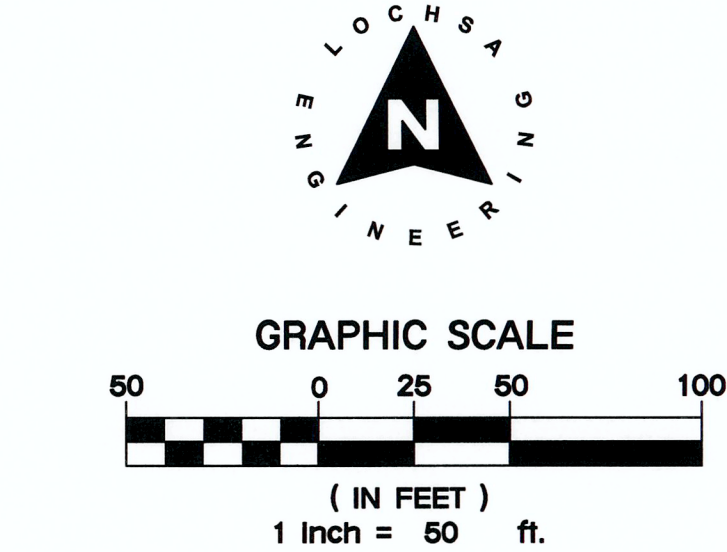
SHEET - OF 22



PROJECT SITE

VICINITY MAP

NOT TO SCALE



LAS VEGAS VALLEY CONSTRUCTION
SITE BEST MANAGEMENT PRACTICES
GUIDANCE MANUAL SECTION 3.5.1
STANDARD NOTES 1-5

1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS OR OTHER MATERIAL FROM THE SITE THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATED IN, THE PUBLIC RIGHT-OF-WAY OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION. ALL SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE TOWNSHIP AND ITS DEER BEH AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY HAS BEEN COMPLETED. SUCH PRACTICES WILL BE TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00020, SECTION II.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT, AREAS SUBJECT TO ACTIVITY, AND ALL CONSTRUCTION ENTRANCE AND EXIT LOCATIONS, AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPON ANY INSPECTION OF ANY OF THE ABOVE AREAS, WHEN NECESSARY, MAKE SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVRI00020, SECTION II.A.2.
5. ACCUMULATED SEDIMENT IN BMP'S SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

A.P.N.:
162-03-801-005

162-03-801-005

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK NO. 8LV113SE6
RIVET AND PLATE TOP OF CURB SE CORNER OF 10TH ST. & ST LOUIS AVE
T21S R61E S03
ELEVATION: 2,010.03 FEET / 612.657 METERS
NAVD '88

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

SAFETY ALERT

Call
Before You
Overhead

Call before you dig
Avoid cutting underground utility lines. It's costly.

**Call
811**

Call before you UnderGround

1-702-227-2929 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION 1-800-227-260

[illegible]

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151 East Warm Springs Road
Las Vegas, Nevada 89119
P: 702-435-1150 F: 702-435-7699
www.simpsoncoultter.com

CONSULTANT:

CONSTRUCTION MGMT:		DATE:
PROJECT MANAGER:		
COORDINATOR:		
BUILDING DEPARTMENT:		
CODE COMPLIANCE:		
AHERA REVIEW:		
ASBESTOS WORK IS: REQUIRED ☐ NOT REQUIRED ☐		
JOB# XXXXXXXX		

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRAIL PI HENDERSON NV 89074 PHONE: 702-798-8710

 CONSTRUCTION MANAGEMENT AND MAINTENANCE (CMM) PROGRAM

1111

DRAWING TITLE:

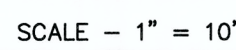
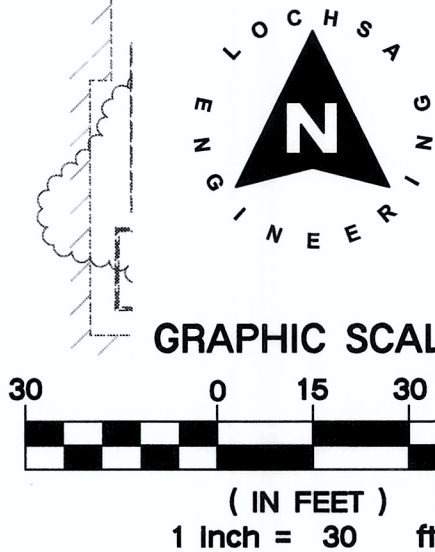
GRADING PLANS OVERALL

FACILITY:

EBEMONT K-8 SCHOOL MPID #1623

1 REMOINT 1 K-0 0001000E IMI 1B # 10020

LEGEND		CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS ③ = SANITARY SEWER ④ = STORM DRAIN ⑤ = ELECTRICAL ⑦ = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100W HPS STREETLIGHTS	150W HPS STREETLIGHTS	SHEET NO.
		PROPERTY LINE	SAWCUT LINE	EXISTING:	---(2210)---	---	---	---	---	---	---	---	(12.34) BC	---	③	③	---	⊗	▷	○	□	(BWV)	---	---	C4.00
		ROW LINE	SCARP LINE	PROPOSED:	---(2122)---	---	---	---	---	---	---	---	12.34 BC	---	④	④	---	⊗	▷	●	□	(BWV)	---	---	SHEET 11 OF 22



1. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATED IN, THE PUBLIC RIGHT-OF-WAY OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.

- | | |
|----------------|----------------|
| CUT | FILL |
| XXXX CY | XXXX CY |
- NOTE: CUT/FILL QUANTITIES ARE TO FINISHED GRADE & DO NOT INCLUDE MATERIAL THICKNESS'S, FOOTINGS, ETC.

NOTE: CUT/FILL QUANTITIES ARE TO FINISHED GRADE &
NOT INCLUDE MATERIAL THICKNESS'S, FOOTINGS, ETC.

NOTE: CUT/FILL QUANTITIES ARE TO FINISHED GRADE & DO NOT INCLUDE MATERIAL THICKNESS'S, FOOTINGS, ETC.

MAX 2% H.S. BUILDING FF
MIN. 5% L.S.

STORM DRAIN CONSTRUCTION NOT

- ## GRADING NOTES:
1. SLOPES 4:1 OR STEEPER AND FINE-GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL, UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.

1. SLOPES 4:1 OR STEEPER AND FINE-GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL, UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS AND LAS VEGAS HIGH ELEVATION ZONES, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

NOTES:

1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT THE PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECTED AREA.
2. GRID BEARING SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARING DUE TO MERIDIAN CONVERGENCE.

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1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECTED AREA.
 2. GRID BEARING SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARING DUE TO MERIDIAN CONVERGENCE.



- ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA
UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR
REGULATING ENTITY HAVING JURISDICTION.
- NOT ALL NOTES USED ON THIS SHEET -

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

THE PROJECT SITE IS COVERED BY THE FLOOD INSURANCE RATE MAP (FIRM) FOR THE CLARK COUNTY AND INCORPORATED AREAS, NEVADA, COMMUNITY PANEL NUMBER: 32003C2170F, EFFECTIVE DATE: NOVEMBER 16, 2011. REVIEW OF PANEL 2170 INDICATES THAT THE SITE IS ENTIRELY LOCATED WITHIN ZONE "X" (UNSHADED), DESCRIBED BY FEMA AS: "AREAS DETERMINED TO BE 0.2% ANNUAL CHANCE FLOODPLAIN."

NAME: TED T. EGERTON PE # 11286 05/16/2019 DATE

CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH APPROVED DRAINAGE STUDY FOR THIS SITE ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

BENCHMARK:
CITY OF LAS VEGAS BENCHMARK NO. 8LV113SE6
RIVET AND PLATE TOP OF CURB SE CORNER OF 10TH ST. & ST LOUIS AVE
T21S R61E S03
ELEVATION: 2,010.03 FEET / 612.657 METERS
NAVD '88

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.

**Call
Before You
Overhead**

1-702-227-2929 1-702-432-5300 OR 1-800-227-2600
FREEWAY AND AIRPORT SYSTEM OF TRANSPORTATION

BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHT
		
		



SC
STUDIO

CONSTRUCTION MGMT:		DATE:
PROJECT MANAGER:		
COORDINATOR:		
BUILDING DEPARTMENT:		
CODE COMPLIANCE:		
AHJRA REVIEW:		
ASBESTOS WORK IS:		
REQUIRED ☐	NOT REQUIRED ☐	
JOB#		
XXXXXXXX		

SHEET NO:

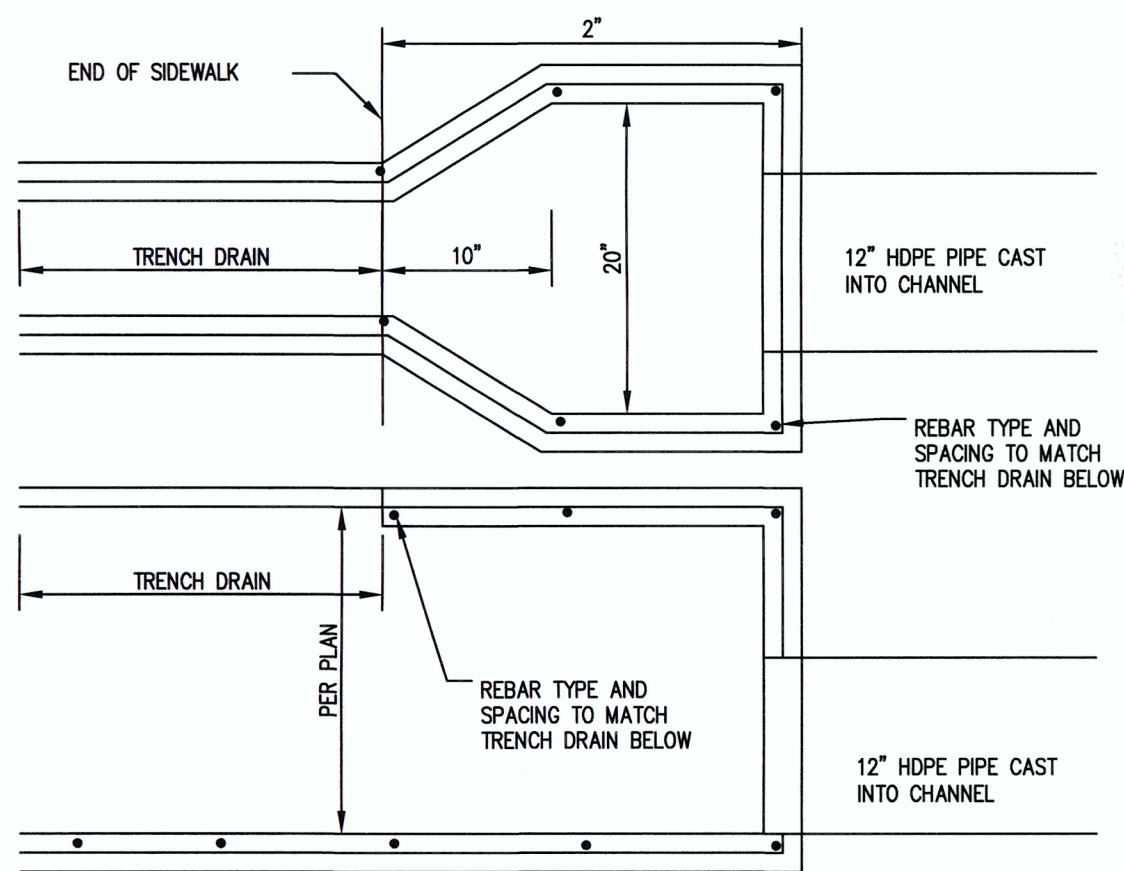
C4.02

SHEET 13 OF 33

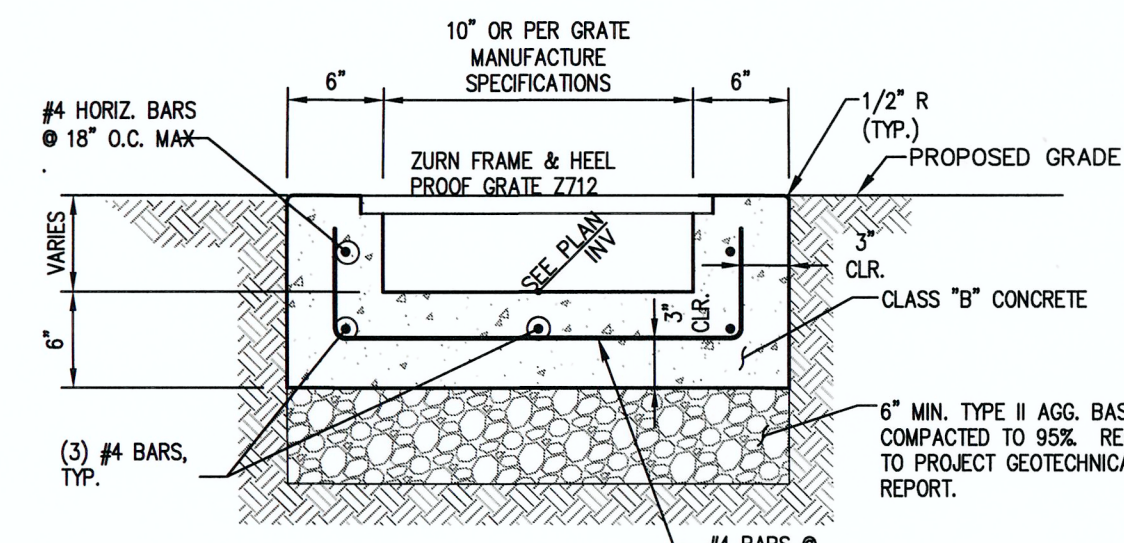
C4.02
БСТ 12.05.22

LEGEND

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SLOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS ① = SANITARY SEWER ② = STORM DRAIN ③ = ELECTRICAL ④ = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100' HPS STREETLIGHTS	150' HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING: 	(-2210)																			
ROW LINE	SCARP LINE	PROPOSED: 	2122																			

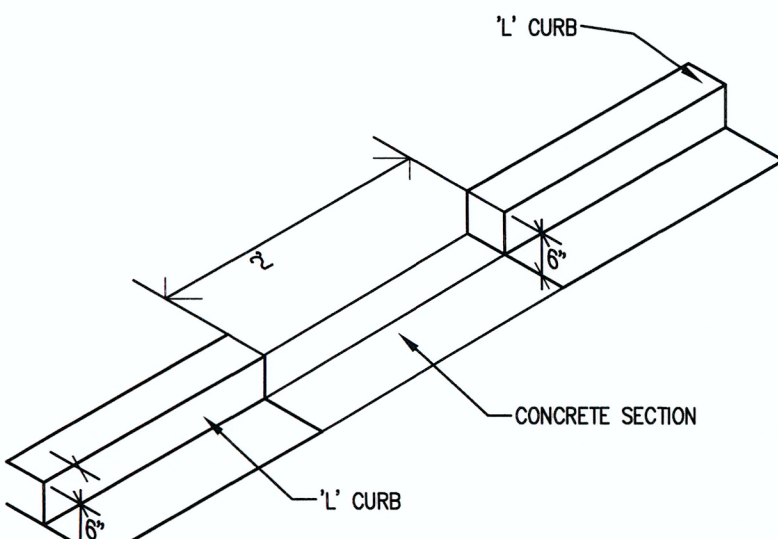


12" SD CONNECTION TO TRENCH DRAIN

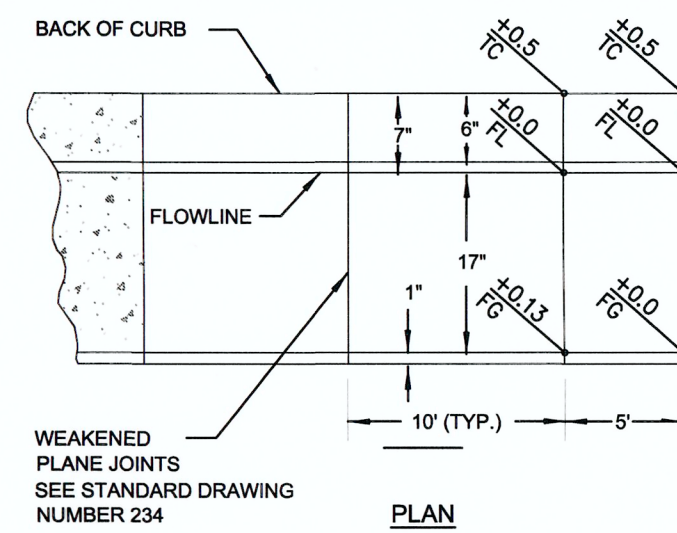


- NOTES:
- WEAKENED PLANE JOINTS REQUIRED AT 10' MAX. SPACING.
 - REFER TO PROJECT GEOTECHNICAL REPORT FOR TYPE II AGGREGATE OR SELECTED MATERIAL DEPTH AND COMPACTION, SUB-GRADE PREPARATION, MEMBRANES AND OTHER PLACEMENT RECOMMENDATIONS.

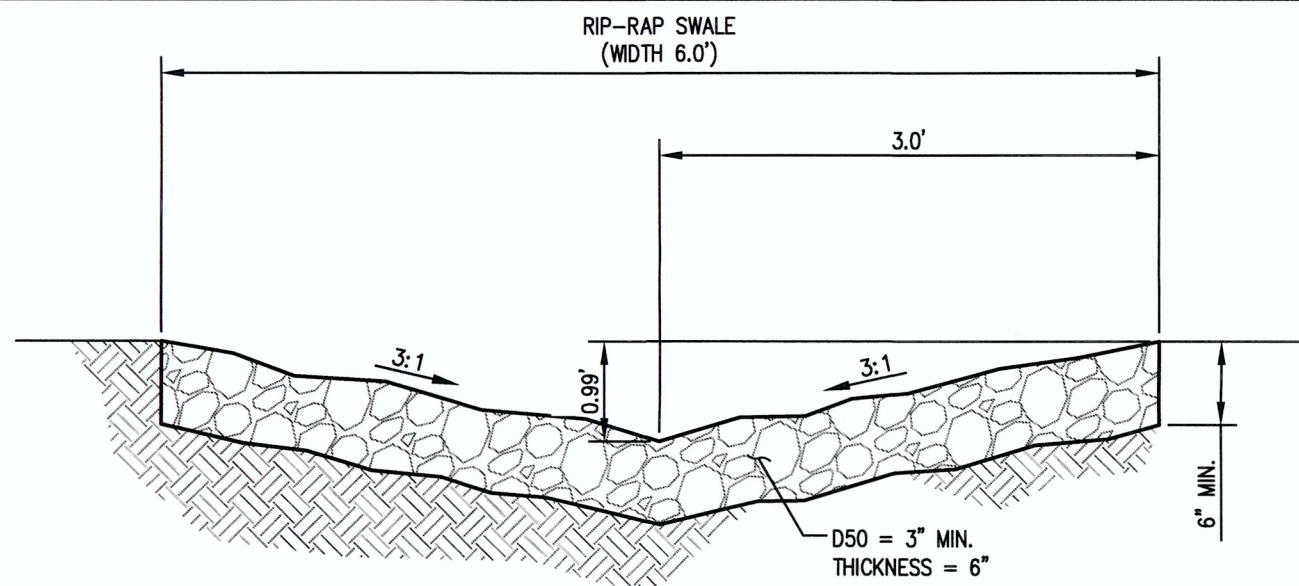
16 TRENCH DRAIN



15 2' CURB OPENING



14 "L" CURB TRANSITION TO LAYING GUTTER FLAT



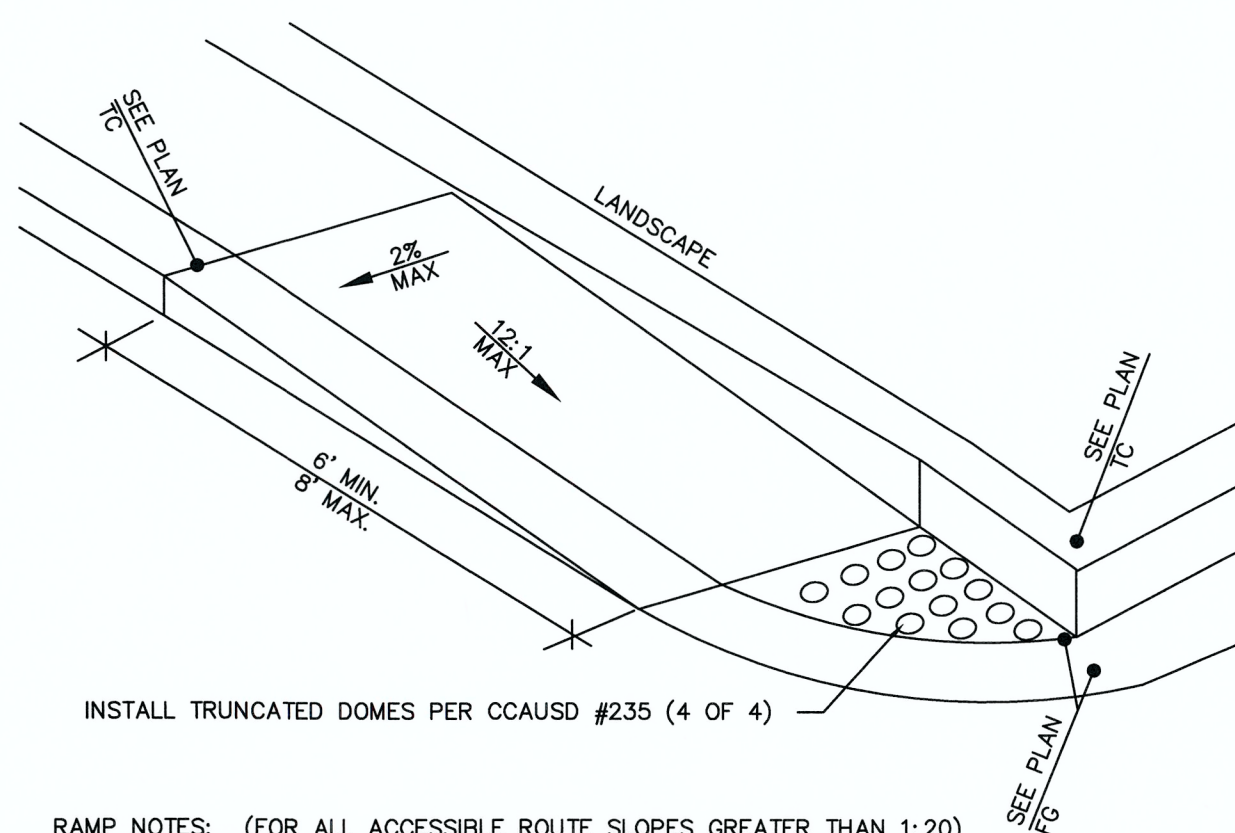
13 RIP-RAP SWALE

19 NOT USED

NOT TO SCALE

18 NOT USED

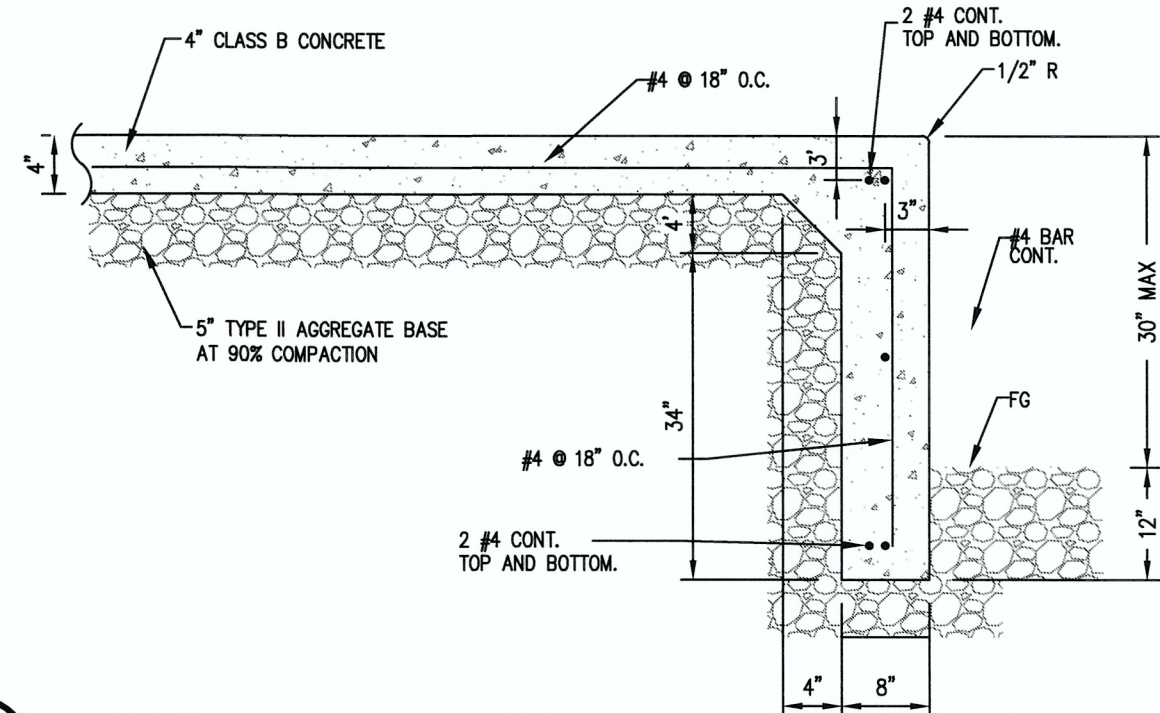
NOT TO SCALE



- RAMP NOTES: (FOR ALL ACCESSIBLE ROUTE SLOPES GREATER THAN 1:20)
- RAMP LENGTHS SHALL BE 6'-0" (72") MAXIMUM FOR EACH 6" RISE
 - RAMP LANDINGS SHALL BE FLAT FOR A MINIMUM DISTANCE OF 5'-0"
 - RAMP CROSS SLOPES SHALL NOT EXCEED 1:48
 - RAMP SLOPES SHALL NOT EXCEED 1:12
 - HEIGHT OF CURBS (OR EDGES) SHALL NOT EXCEED 6"
 - RAMP CLEAR WIDTHS TO BE 3'-0" MINIMUM
 - RAMP HEIGHTS ARE NOT INTENDED TO EXCEED 6" IN HT. PER EA. RUN.
 - RAMP SHALL HAVE A BROOM FINISH.

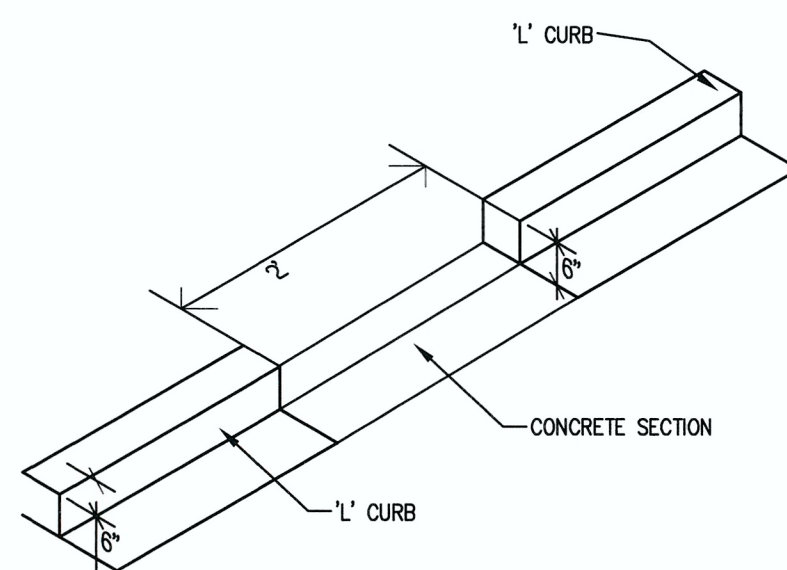
12 ON-SITE RAMP

NOT TO SCALE



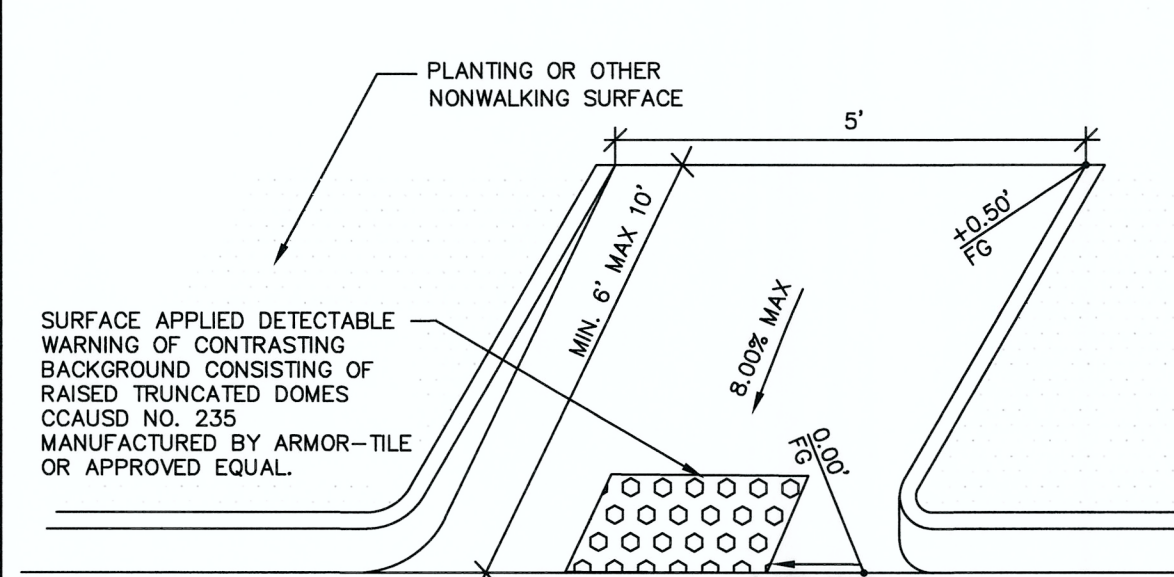
11 TURNED DOWN SIDEWALK

NOT TO SCALE



10 4' CURB OPENING

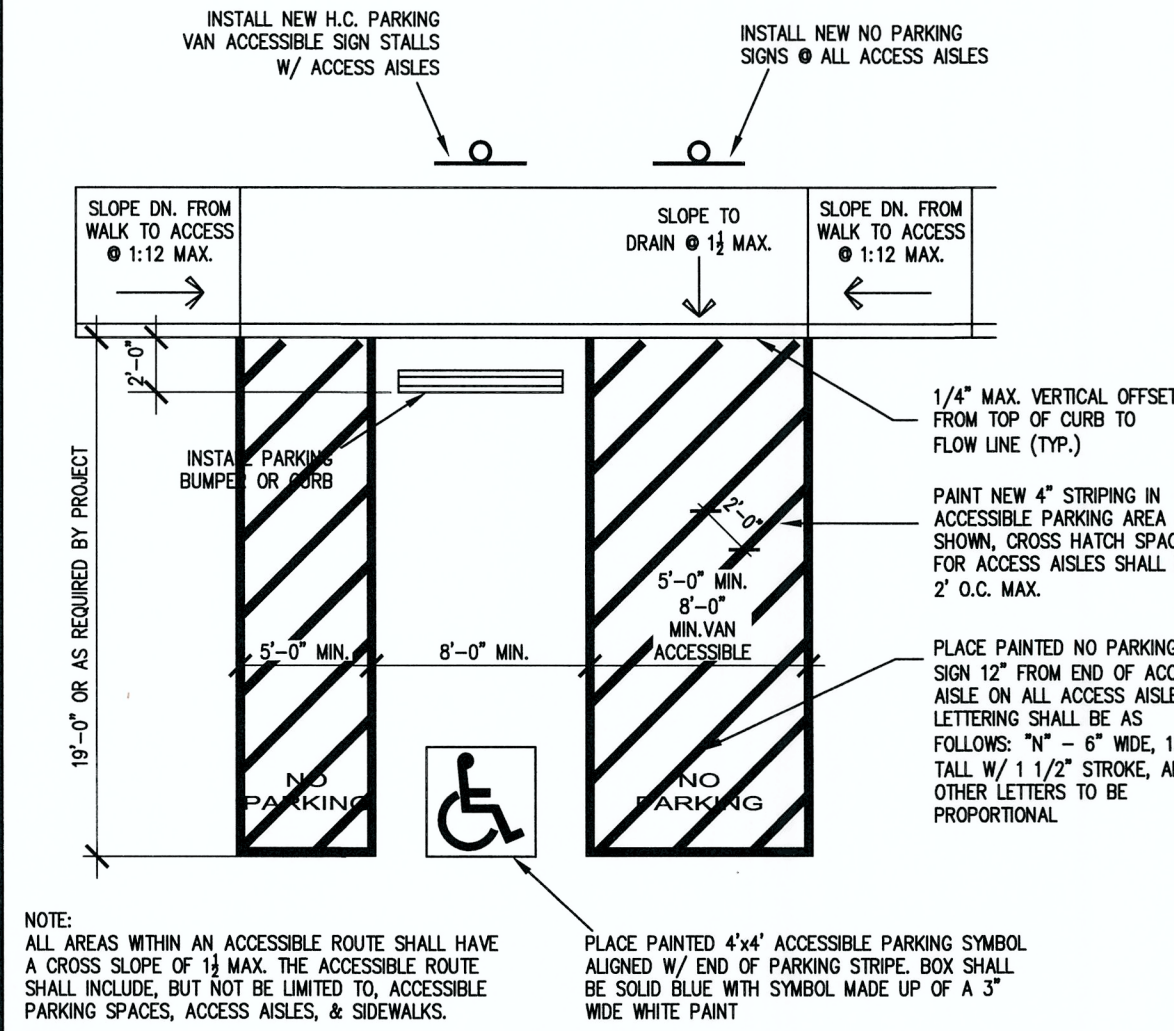
NOT TO SCALE



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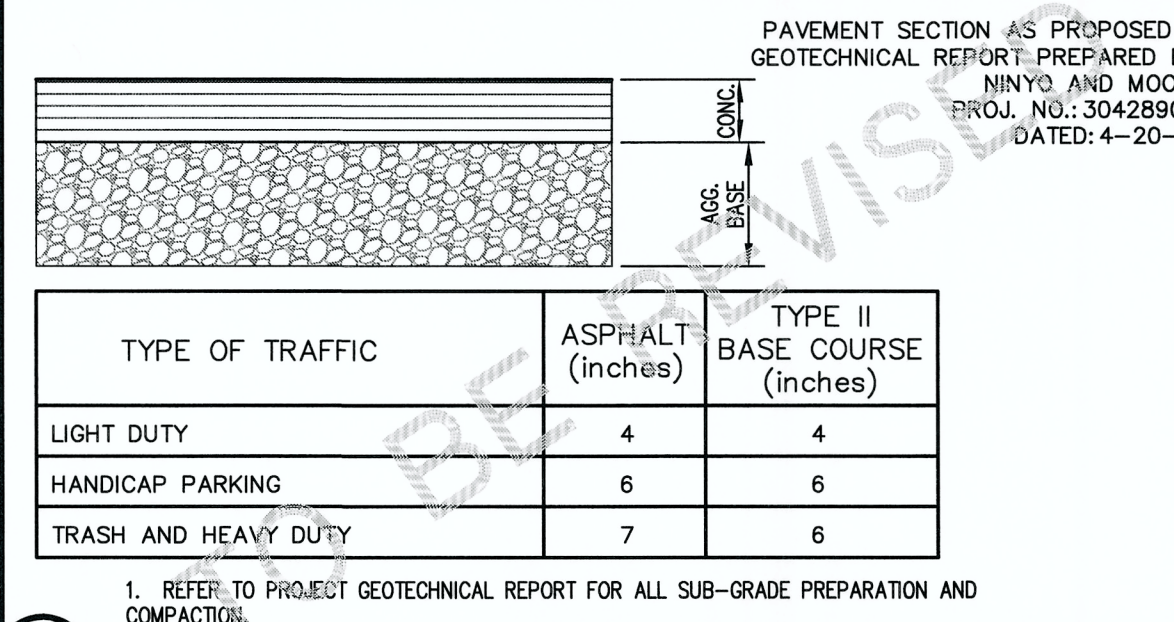
9 ON-SITE RAMP

NOT TO SCALE



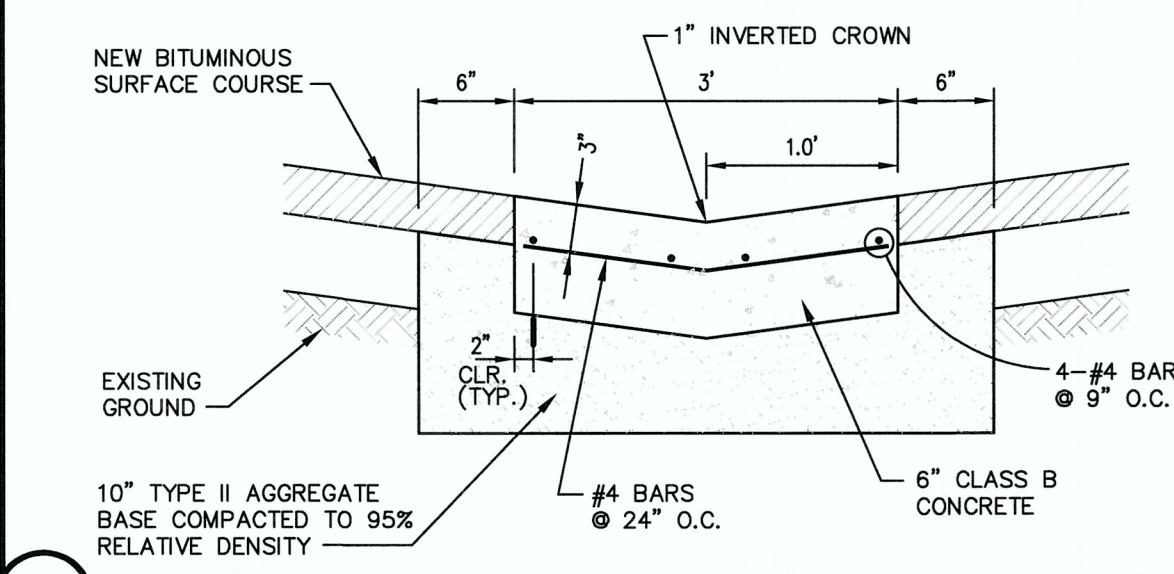
8 ACCESSIBLE PARKING DETAIL

NOT TO SCALE



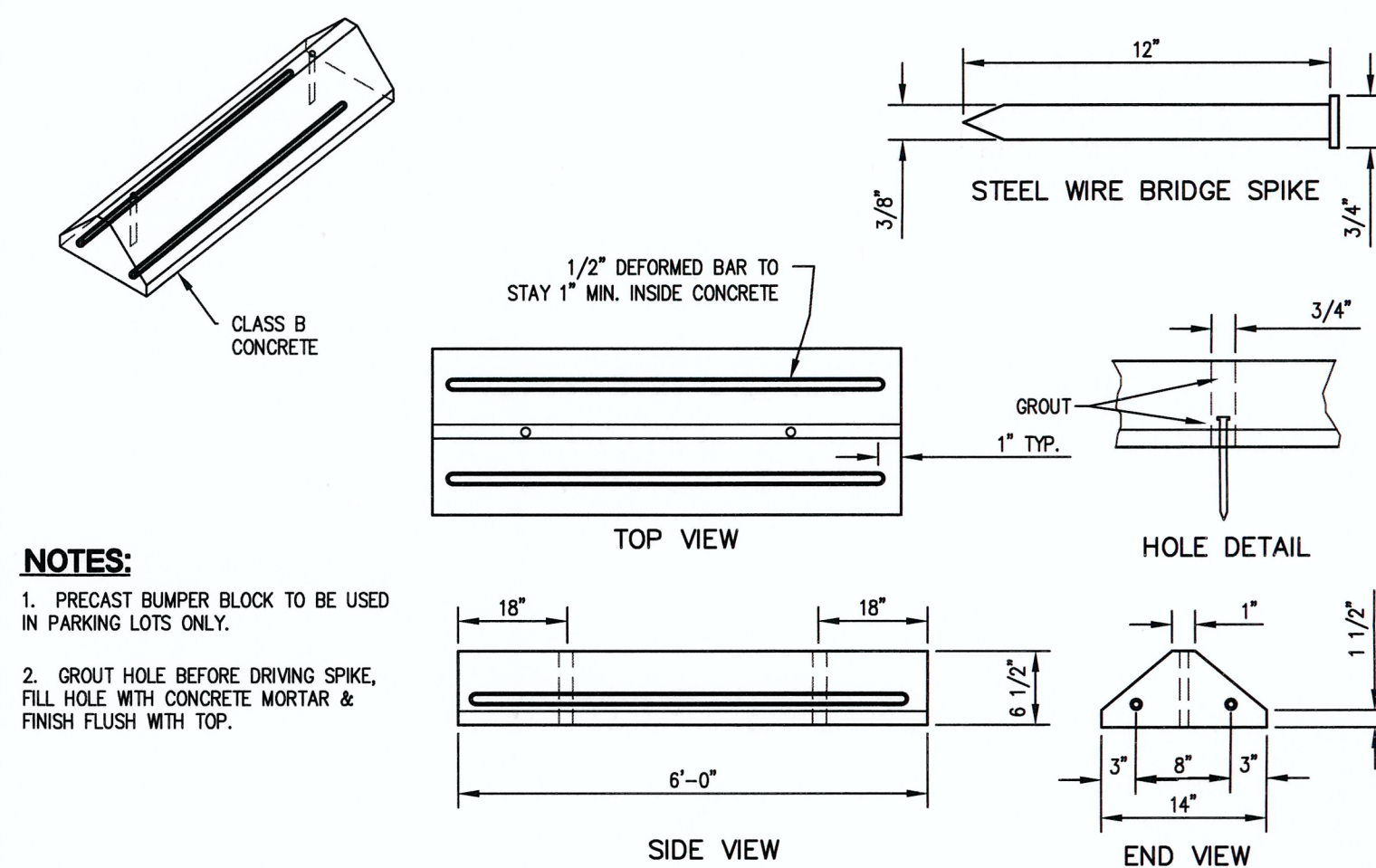
7 CONCRETE PAVEMENT SECTION

NOT TO SCALE



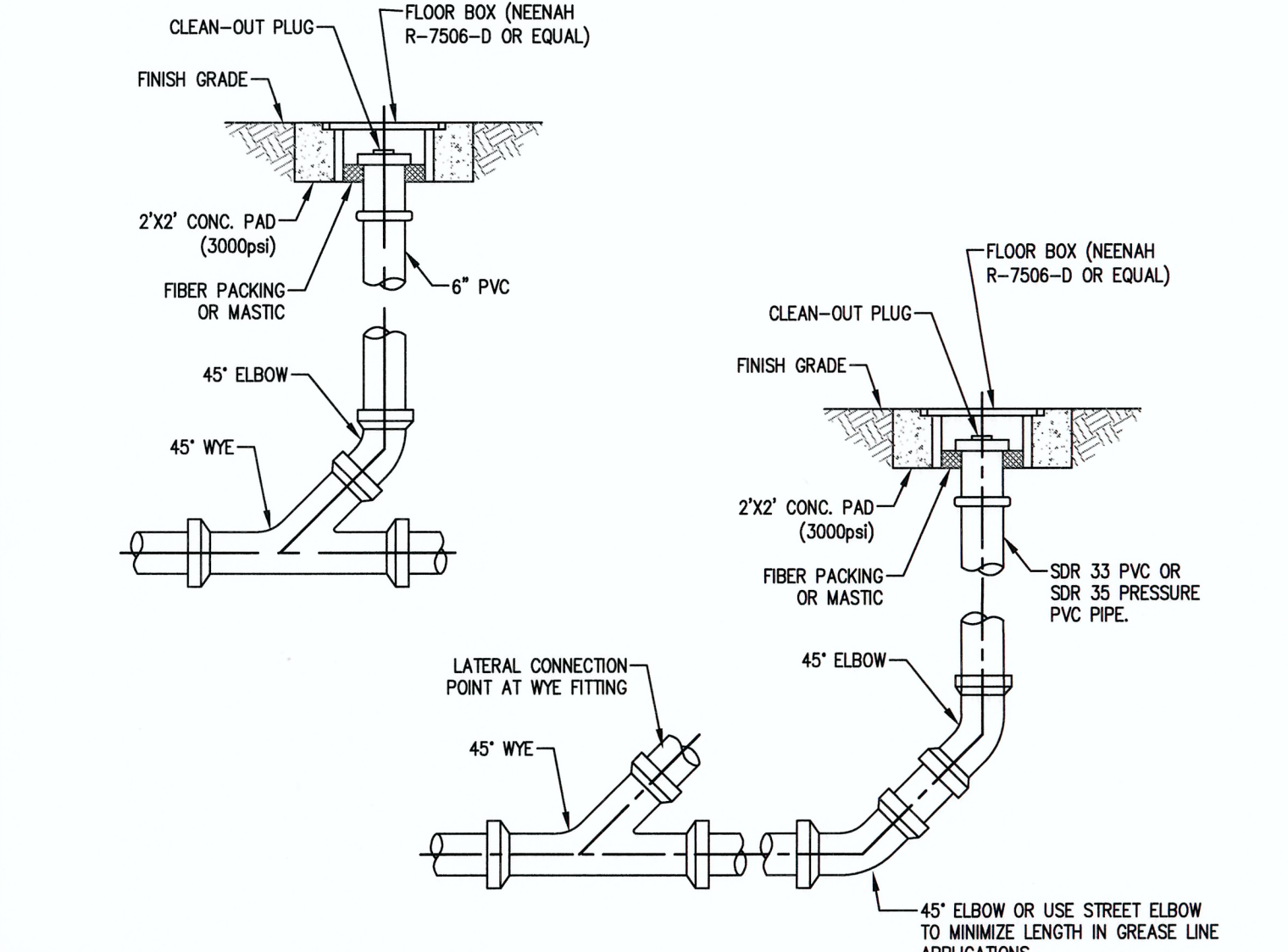
6 3' VALLEY GUTTER

NOT TO SCALE



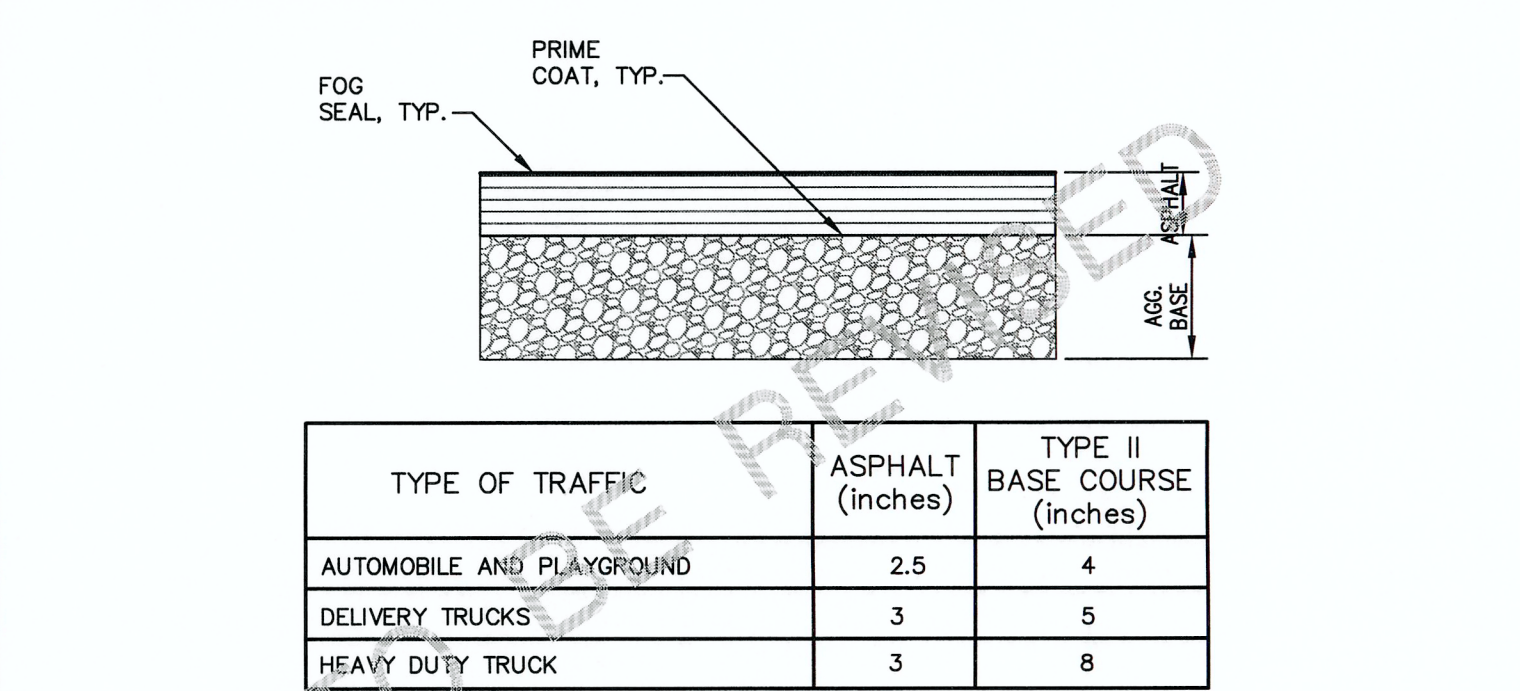
4 BUMPER BLOCK DETAIL

NOT TO SCALE



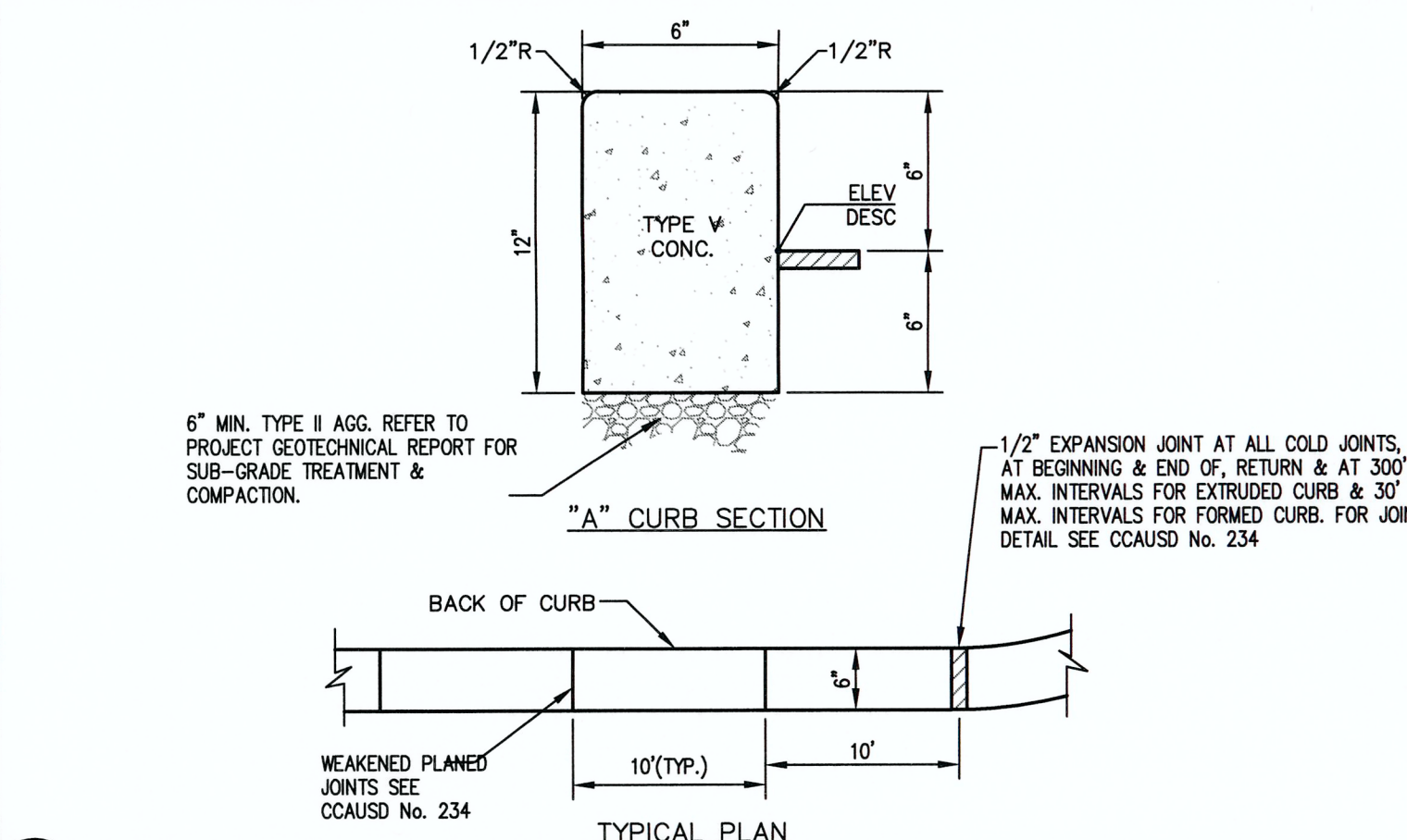
3 SEWER CLEAN-OUT

NOT TO SCALE



2 AC PAVEMENT SECTION

NOT TO SCALE



1 ON-SITE "A" TYPE CURB

NOT TO SCALE

REVISIONS:

REV.	DESCRIPTION	DATE
1		
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19		

SEAL: PROFESSIONAL ENGINEER - CIVIL
No. 11266
05-16-2019

DATE: 05/16/19
DRAWN BY: MMT
SUBMITTAL: 181203
A/E PROJECT NO.

STUDIO

Simpson Coulter | STUDIO
PLANNING • ARCHITECTURE • INTERIOR DESIGN
151 East Warm Springs Road
Las Vegas, Nevada 89119
P: 702-435-1150 F: 702-435-7699
www.simpsoncoulter.com

CONSULTANT:

Lochsa Engineering
6345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone: (702) 965-9312
Fax: (702) 385-9317
www.lochsa.com

CONSTRUCTION MGMT: DATE:

PROJECT MANAGER:

COORDINATOR:

BUILDING DEPARTMENT:

CODE COMPLIANCE:

ASBESTOS WORK IS:

REQUIRED ☐ NOT REQUIRED ☐

JOB# XXXXXXXX

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

PROJECT: ---

DRAWING TITLE: DETAIL SHEETS 1 OF 2

FACILITY: FREMONT K-8 SCHOOL MPID #1623

SHEET NO: C6.01

SHEET 21 OF 22



A/E: Simpson Coulter | STUDIO
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Las Vegas, Nevada 89119
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8345 South Jones Blvd.
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Las Vegas, NV 89118
Phone (702) 365-9312
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CONSTRUCTION MGMT:		DATE:
PROJECT MANAGER:		
COORDINATOR:		
BUILDING DEPARTMENT:		
CODE COMPLIANCE:		
AHERA REVIEW:		
ASBESTOS WORK IS: REQUIRED ☐ NOT REQUIRED ☐		

JOB# XXXXXXXX

	CLARK COUNTY SCHOOL DISTRICT CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710
PROJECT:	

DRAWING TITLE:	DETAIL SHEETS DETAIL SHEET 2 OF 2
FACILITY:	FREMONT K-8 SCHOOL MPID #1623

SHEET NO:

C6.02

SHEET 22 OF 22