

NOTICE OF OPEN MEETING

Posted 5:00 p.m., Friday, February 2, 2024

Notice is hereby given that the Neosho City Council will meet in regular session on Tuesday, February 6, 2024 at 7:00 p.m., in the Council Chambers at City Hall 203 East Main Street, Neosho, Missouri.

AGENDA REGULAR SESSION NEOSHO CITY COUNCIL

The agenda of this meeting includes:

OPENING PRAYER & PLEDGE OF ALLEGIANCE

CALL TO ORDER

ROLL CALL

APPROVAL OF AGENDA

CONSENT AGENDA

1. January 16, 2024 Open Session Council Minutes
2. Bill No. 2024-01: Contract with Construction Services (CSG) for Council Dais Renovation
3. Bill No. 2024-02: Join Show Me PACE, Property Assessed Clean Energy Program
4. Bill No. 2024-03: Amending Chapter 430 of City Code Storm Water
5. Bill No. 2024-04: Stratford-Freeman Storm Water Grant Modification

VISITOR'S BUSINESS

BIDS

1. Irrigation Water Intake Repair
2. Fairway Mower
3. Recycle Center Forklift

NEW BUSINESS

1. Bill No. 2024-05: Contract with Jimmy Smith Landscaping for Cemetery Grounds Maintenance
2. Bill No. 2024-06: Contract with Maxim Golf for the Managing Services of the Neosho Golf Course
3. Bill No 2024-07: FY24 Budget Amendment
4. Bill No. 2024-08: Flynn Drilling Company, Inc.
5. Bill No. 2024-09: Superion Newton County Public Safety Software
6. Bill No. 2024-10: Change Order for MoDOT 21-096A-2 Airport T-Hanger
7. Bill No. 2024-11: Contract with CSG for All Irrigation Water Intake Repairs-Golf Course

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8. Resolution Bill No. 2024-04: Blight for 224 N Washington St (Schaffer Building).
9. NLC - Service Line Warranty Customer Letter
10. Region M Grant Application
11. Request to Waive Section for Vendor Event

REPORT OF CITY OFFICERS

1. Revisions to Parks/Golf

CLOSED SESSION

1. Section 610.021 (1) RSMo,...Legal actions, causes of action or litigation involving a public governmental body and any confidential or privileged communications between public governmental body or its representatives and its attorneys.
Section 610.021 (2) RSMo...Leasing, purchase or sale of real estate by a public governmental body where public knowledge of the transaction might adversely affect the legal consideration, therefore.

ADJOURN

MINUTES
NEOSHO CITY COUNCIL
January 16, 2024 - 7:00 PM
Neosho Council Chambers
203 E. Main St., Neosho, MO

OPENING PRAYER & PLEDGE OF ALLEGIANCE

Shain Jordan opened with prayer and Mayor Davidson led the pledge of allegiance.

CALL TO ORDER

Mayor Davidson called the meeting to order at 7 p.m.

ROLL CALL

COUNCIL PRESENT:

Angela Thomas, Carl Cobb, Julie Humphrey, Tom Workman, Charles Collinsworth, Ashton Robinson, Richard Davidson

COUNCIL ABSENT:

None were absent.

CITY OFFICERS PRESENT:

David Kennedy, City Manager; Jordan Paul, City Attorney; and Cheyenne Wright, City Clerk, minutes taken by clerk.

APPROVAL OF AGENDA

Councilman Collinsworth made a motion to Approve the Agenda; Councilman Workman seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

CONSENT AGENDA

Councilman Cobb made a motion to Approve the Consent Agenda to include the following items:

January 2, 2024 Open Session Council Minutes

Bill No. 2023-207

Councilwoman Humphrey seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas,

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Tom Workman
No: None
Abstain: None
Passed.

CORRESPONDENCE

Thank you to Public Works Department

City Clerk Wright read a thank you to the Public Works Department from the Neosho Area Chamber of Commerce.

VISITOR'S BUSINESS

There was no visitor's business.

BIDS

Golf Course Management

City Manager Kennedy addressed the city council stating that the purpose of this agenda item is to seek council approval on whether to move forward with contracting with a company to manage the workings of the Neosho Golf Course. Staff went out for bid and received three bids back.

Maxim Golf Solutions LLC \$45,000.00 per year
Golf Automation Fixed Cost Method \$214,800.00 per year
Oliphant Golf Management \$150,000.00 per year plus 10% of the improved year over year revenue growth.
The city manager recommended moving forward with Maxim Golf for golf management services.

Bryan Minnis, Maxim Golf, introduced himself and gave his brief background.

Discussion was held amongst Mr. Minnis and the council.

Mayor Davidson made a motion to approve the bid from Maxim Golf with immediate consultation to move forward with the transition prior to the contract completion with the company; Councilman Collinsworth seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman
No: None
Abstain: None
Passed.

Council Dais

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City Clerk Wright addressed the city council stating that staff went out for bid for the council dais renovation. Staff sent out multiple bids and received one bid back from Construction Services Group (CSG).

Cost for the Council Dais \$39,748.00

Remove and Replace the Flooring \$9,685.00

Relocation of the Existing Projector and Audio/Visual Equipment (3 Adt'l Mics) \$2,800.00

Staff recommends approving the bid from CSG in the total amount of \$52,233.00

Councilman Collinsworth made a motion to Approve the bid from CSG in the amount of \$52,233.00;
Councilman Cobb seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Golf Carts

City Manager Kennedy addressed the city council stating that the purpose of this agenda item is to seek council approval for the purchase of golf carts to replace the stolen carts at the golf course. Staff sent out multiple bids and received two bids back.

Clear Creek Golf Car:

Option 1: 2024 Club Car Tempo Gas cars \$35,400.00

Option 2: 2024 Club Car Tempo Gas cars currently on order (grey) \$33,600.00

Option 3: 2021 Club Car Tempo Gas cars which are identical to the existing fleet. \$28,800.00

Masek Golf Car Company:

Option 1: 2024 Yamaha "AFI" Model EFI Gas cars, white: \$36,522.00

Option 2: 2020 Yamaha "Quietech" Model EFI gas golf car, grey: \$29,310.00

KGT:

2024 EFI Gas EZ-GO RXV \$38,041.32

This will be an insurance claim for replacement with MIRMA, The city will pay the deductible and be reimbursed minus depreciation. It is the recommendation to purchase Option 3 from Clear Creek Golf Car for the amount of \$28,800.00.

Councilman Collinsworth made a motion to Approve the bid from Clear Creek Golf Carts for Option 3;
Councilman Cobb seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: Richard Davidson

Abstain: None

Passed.

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Cemetery Lawn Maintenance

City Clerk Wright addressed the city council stating that in November 2019, the Neosho IOOF went into receivership with the state and the city of Neosho acquired ownership. At that time, it was cost-effective to contract with a company for lawn maintenance of the cemetery grounds. Staff went out to bid for lawn maintenance and would like to present two options to the council.

Option 1 would be to approve one of the bids presented to council tonight and contract with that company for three years of mowing services.

Option 2 would be for the city to take over the lawn maintenance of the cemetery.

Staff sent out multiple bids and received five bids back.

1st Choice Lawn Care \$95,000.00 per year

Jimmy Smith Landscaping \$108,000.00 per year

Frazier Lawn Service \$144,000.00 per year (1st year) \$146,880.00 (2nd year) \$149,817.60 (3rd year)

Benny's Lawn & Landscaping LLC \$180,000.00 per year

Joplin Mow \$185,000.00 per year (1st year) \$194,250.00 (2nd year) \$203,962.50 (3rd year)

Councilman Cobb made a motion to Approve the bid from Jimmy Smith Landscaping of \$108,000.00 per year; Councilman Collinsworth seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Mobile Computers

Public Works Director Siler addressed city council stating that the purpose is to seek approval to purchase mobile computers that will eliminate the six desktop computers, and the cost associated with maintaining them. We sent out three bid packets and received 3 back.

Public Safety Solutions

Getac K120G2-R and all necessary equipment total bid \$42,669.70 Plus \$2,000 for Stronghold for integration

Stronghold Data

Dell 7230 Tablet and all necessary equipment total bid \$48,357.14 No charge for integration

Trinity Safety Solutions

Getac K120G2-R and all necessary equipment total bid \$40,315.00 Plus \$2,000 for Stronghold for integration

Public Works budgeted \$46,000 for this purchase. With the added building inspector computer, we will be under budget for these items.

Councilman Collinsworth made a motion to Approve the bid from Stronghold Data as presented by staff; Councilwoman Robinson seconded.

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Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Finance Folder/Inserter Machine

Finance Director Forest addressed the city council and stated that the current folder inserter is under a lease agreement. December 2023 was our last billing cycle under that lease. We are in a secondary lease period with the folder inserter. We sent out 4 bids and received two (2) on January 4th for the purchase of a new folder insert. The bid requested 2 options to be bid on. One for the purchase of a new machine and one as a lease option. Neither bidder supplied a lease. Any purchase outside of a lease is not a budgeted item and would come from the fund balance of water administration.

Councilman Cobb made a motion to Approve; Mayor Davidson seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Streets Dept Mini Excavator

Public Works Director Siler stated that staff reached out to three area dealers and secured three quotes utilizing Sourcewell. Each quote included three different sized buckets, and a hydraulic thumb.

Crown Power

Kubota KX040 total bid \$73,272.45

Bobcat of Joplin

Bobcat E48 total bid \$74,496.58

Murphy Tractor and Equipment

John Deere 50 total bid \$85,545.02

Staff budgeted \$100,000 for this purchase.

Councilman Cobb made a motion to Approve the bid as presented by staff; Councilwoman Humphrey seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

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No: None
Abstain: None
Passed.

NEW BUSINESS

Bill No. 2024-01: Contract with Construction Services (CSG) for Council Dais Renovation

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Agreement for Construction Services with Marion Company, LLC, d/b/a Construction Services Group, a Missouri Limited Liability Company, for the purpose of providing construction services related to renovation of the Council Dais for the not to exceed price of Fifty-Two Thousand Two Hundred Thirty-Three and 00/100 Dollars (\$52,233.00); and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

Attorney Snyder read Bill No. 2024-01 in title only.

Councilwoman Robinson made a motion to Approve and Discuss Bill No. 2024-01; Councilwoman Humphrey seconded.

City Clerk Wright stated that the council approved the bid earlier in the meeting for CSG to renovated council chambers. This is the contract for moving forward with the renovation.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman
No: None
Abstain: None
Passed.

Bill No. 2024-02: Join Show Me PACE, Property Assessed Clean Energy Program

AN ORDINANCE TO ENABLE THE CITY OF NEOSHO, MISSOURI TO JOIN SHOW ME PACE, PURSUANT TO SECTIONS §67.2800 TO §67.2835, RSMO, THE “PROPERTY ASSESSMENT CLEAN ENERGY ACT,” AND STATING THE TERMS UNDER WHICH THE CITY OF NEOSHO WILL CONDUCT ACTIVITIES AS A MEMBER OF SUCH DISTRICT.

Attorney Snyder read Bill No. 2024-02 in title only.

Councilwoman Robinson made a motion to Approve and Discuss Bill No. 2024-02; Councilman Collinsworth seconded.

City Manager Kennedy addressed the city council stating that this is the ordinance that was discussed and explained during the January 16th council meeting.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

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No: None
Abstain: None
Passed.

Bill No. 2024-03: Amending Chapter 430 of City Code Storm Water

AN ORDINANCE of the City of Neosho amending Chapter 430 Stormwater Runoff Management, by enacting a new Section 430.050 Stormwater Management Criteria Manual, and by repealing and replacing paragraph (A)(7) of Section 430.140 Final Stormwater Runoff Management Plan, and by repealing and replacing Section 430.186 Permit Application of the Code of Ordinances for the City of Neosho.

Attorney Snyder read Bill No. 2024-03 in title only.

Councilwoman Robinson made a motion to Approve and Discuss Bill No. 2024-03; Councilwoman Thomas seconded.

Development Services Director Leavens addressed the council stating that staff has been working to bring the city's stormwater permit up to date to be in compliance with Missouri DNR requirements.

At the recommendation of the city engineers this ordinance change will:

1. Require detention basins to be designed for both the larger and the smaller storms. Design of detention basins to meet the pre-project peak flowrates for the 2-, 10-, and 100-year storm events is the industry minimum.
2. Remove of Section 430.186 – The requirements of MCM 4 and MCM 5 of the MS4 permit necessitate a more complicated process than listed here when a developer/builder is applying for a Neosho Land Disturbance Permit. (Simply relying on the State Land Disturbance Permit is no longer enough.) Procedures for acquiring a Neosho Land Disturbance Permit (Section 430.184) will be set forth in the proposed Stormwater Management Criteria Manual. The permit application will require pre-construction plan review (which is already required by Chapter 430 Article III) for compliance with existing erosion and sediment control requirements, as well as the water quality requirements that will be adopted with the Criteria Manual.
3. New Section adopting Neosho's Stormwater Management Criteria manual. The MS4 Permit requires permanent water quality protection for all sites that disturb 1 acre or more. This stormwater design manual contains the minimum standards for water quality.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman
No: None
Abstain: None
Passed.

Bill No. 2024-04: Stratford-Freeman Storm Water Grant Modification

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Amendment to the Agreement with the Department of Economic Development, an executive branch agency of the State of Missouri, for the purpose of accepting community development block grant program funding for hazard mitigation planning; and authorizing the Mayor or his designee to execute the same by and on behalf of the City of Neosho.

Attorney Snyder read Bill No. 2024-04 in title only.

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Councilwoman Thomas made a motion to Approve and Discuss Bill No. 2024-04; Councilwoman Humphrey seconded.

Development Services Director Leavens stated that the purpose of this item is to gain the council's approval for the mayor to sign a resolution to seek a modification to the current DED CDBG Stormwater Grant to extend the area of the box culvert construction south along Freeman Road approximately 160 feet.

Bids for the construction of the Stratford-Freeman stormwater project came in under budget, leaving approximately \$200,000 unused. This resolution would allow the city to seek an additional 160 feet of box culvert on the south end of the Freeman Road portion with the intent of extending the culvert under Bond Street.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Resolution Bill No. 2024-01: Utility Refund Policy

A RESOLUTION of the City of Neosho, Missouri, adopting a Utility Refund Policy.

Attorney Snyder read Resolution Bill No. 2024-01 in title only.

Councilwoman Thomas made a motion to Approve and Discuss Resolution Bill No. 2024-01; Councilwoman Robinson seconded.

Finance Director Forest addressed the council stating that this item is to seek approval on a refund policy for the city's utility customers. Finance has no written policy for refunds of utility customer credit balances.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Resolution Bill No. 2024-02: HomeServe Warranty Marketing Agreement

A RESOLUTION approving a Marketing Agreement between the City of Neosho, Missouri and Utility Service Providers Label, Inc., d/b/a Service Line Warranties of America to allow Marketing of service line warranties to users of water and sewer utilities.

Attorney Snyder read Bill No. 2024-01 in title only.

Councilwoman Robinson made a motion to Approve and Discuss Resolution Bill No. 2024-02; Councilwoman

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Thomas seconded.

Finance Director Forest stated that this item is to seek council's approval for mayor to sign the resolution and the marketing agreement between Utility Service Partners Private Label, Inc d/b/a Service Line Warranties of America and the City of Neosho. Utility Service Partners Private Label, Inc d/b/a Service Line Warranties of America offers a service line warranty program for residential customers. They provide education on homeowners' responsibilities for lateral lines and provide affordable repair plans for external water and sewer lines and interior water lines. The city wishes to allow the use of our logo and approve advertising materials being sent to our utility customers for this program.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

By a consensus of council to bring back the letter for approval.

Resolution Bill No. 2024-03: HAAS Warehousing, Inc. Contract for Purchase of Land

A RESOLUTION approving a Real Estate Purchase Contract between the City of Neosho, Missouri and Haas Warehousing, Inc., a Missouri Corporation for the purchase of certain real property located in the City of Neosho.

Attorney Snyder read Resolution Bill No. 2024-03 in title only.

Councilman Collinsworth made a motion to Approve and Discuss Resolution Bill No. 2024-03; Councilman Workman seconded.

City Manager Kennedy stated that this property is being purchased for a future construction site for a Public Safety Center.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Region M Grant Authorization

Public Works Director Siler addressed the council stating that this is to authorize staff to apply for the Region M Grant for the Neosho Recycle Center.

Councilwoman Thomas made a motion to Approving staff to apply for the Region M Grant for the Neosho Recycle Center; Councilwoman Humphrey seconded.

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Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

APPOINTMENTS AND VACANCIES

Councilman Collinsworth made a motion to Approve Terry Neff's reappointment to the Historic District Commission and Lynn Otey's reappointment to the Neosho Senior Center Board; Councilman Workman seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

REPORT OF CITY OFFICERS

Finance Report - December

Finance Director Forest addressed the council updating council on the financials.

Senior Center Phone System

City Manager Kennedy stated that the AAA (Area Agency on Aging) is still on the old POTS phone system at the Neosho Senior Center. By a consensus of the council to add the three lines at the Senior Center under the city's agreement.

CLOSED SESSION

Mayor Davidson made a motion to go into closed session under Section 610.021 (1) RSMo; Councilwoman Thomas seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Mayor Davidson closed open session at 8:24 p.m.

Mayor Davidson reconvened open session at 8:48 p.m. and announced that one vote was taken.

ADJOURN

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There being no further business to come before the city council, Mayor Davidson asked for a motion to adjourn.

Councilman Collinsworth made a motion to Adjourn; Councilwoman Robinson seconded.

Roll call vote:

Yes: Carl Cobb, Charles Collinsworth, Richard Davidson, Julie Humphrey, Ashton Robinson, Angela Thomas, Tom Workman

No: None

Abstain: None

Passed.

Mayor Davidson adjourned the January 16th, 2024 Council Meeting at 8:49 p.m.

APPROVED

ATTEST

NEOSHO CITY COUNCIL

Mayor

City Clerk

REQUESTED COUNCIL MEETING DATE: January 16, 2024

ITEM: Bill No. 2024-01: Contract with Construction Services (CSG) for Council Dais Renovation

ORIGINATING DEPARTMENT: City Clerk

ATTACHMENT:

1. Bill No. 2024-01 Contract with Marion Co. Const Serv Group
 2. Agreement Neosho and Marion Co - Council Dais Renovation
-

PURPOSE:

To approve the contract with Construction Services Group for the renovation of the council dais.

BACKGROUND:

Staff went out for bid for the renovation of the council dais and Construction Services Group was the only bid received in the amount of \$52,233.00.

RECOMMENDATION:

Staff recommends approving Bill No. 2024-01 and authorizing the Mayor to sign.

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Agreement for Construction Services with Marion Company, LLC, d/b/a Construction Services Group, a Missouri Limited Liability Company, for the purpose of providing construction services related to renovation of the Council Dais for the not to exceed price of Fifty-Two Thousand Two Hundred Thirty-Three and 00/100 Dollars (\$52,233.00); and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Agreement for Construction Services by and between the City of Neosho, Missouri, and Marion Company, LLC, d/b/a Construction Services Group, a Missouri Limited Liability Company, for the purpose of providing construction services related to renovation of the Council Dais for the not to exceed price of Fifty-Two Thousand Two Hundred Thirty-Three and 00/100 Dollars (\$52,233.00), including said renovation, removal and replacement of flooring and relocation of existing projector and audio/visual equipment, a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit “A,” be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho, Missouri, is hereby authorized and directed to execute said Agreement by and on behalf of the City of Neosho.

Section 3. That this Ordinance shall be in full force and effect from and after its passage.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this 16th day of January, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

THIS AGREEMENT, made this ____ day of _____, 2024, by and between CITY OF NEOSHO, MISSOURI hereinafter called "OWNER" and MARION COMPANY, LLC, doing business as a CONSTRUCTION SERVICES GROUP, hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of renovation of the Council Dais, including said renovation, removal and replacement of flooring and relocation of existing projector and audio/visual equipment.

2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS on the date as stipulated in the NOTICE TO PROCEED and will complete same within 90 consecutive calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of FIFTY-TWO THOUSAND TWO HUNDRED THIRTY-THREE & 00/100 DOLLARS (\$52,233.00), or as shown in the BID Schedule, including Alternate Bid Items.

5. The term "CONTRACT DOCUMENTS" means and includes the following:

- (A) Invitation\Advertisement to Bid
- (B) Instruction to Bidders
- (C) Bid
- (D) Bid Bond
- (E) Agreement Form
- (F) General Conditions of the Contract
- (G) Supplemental General Conditions
- (H) Payment Bond
- (I) Performance Bond
- (J) Notice of Award
- (K) Notice to Proceed

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the Bid Specifications.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in three (3) counterparts, each of which shall be deemed an original on the date first above written.

(SEAL)

OWNER:

ATTEST:

City of Neosho, Missouri

Cheyenne Wright

By: _____

City Clerk

Name: Richard Davidson

Title: Mayor

(SEAL)

ATTEST:

CONTRACTOR:

Marion Company, LLC.

By: _____

Name (Please Type)

Tyler Marion

Title

Address

REQUESTED COUNCIL MEETING DATE: January 16, 2024

ITEM: Bill No. 2024-02: Join Show Me PACE, Property Assessed Clean Energy Program

ORIGINATING DEPARTMENT: City Clerk

ATTACHMENT:

1. Bill No. 2024-02 to Join Show Me PACE with Cooperative Agreement-Not Codified
 2. PACE Flyer Info
-

PURPOSE:

To approve an ordinance with PACE.

BACKGROUND:

Council,

[Missouri Energy Initiative](#), a Missouri 501c3 dedicated to creating collaborative and innovative solutions to Missouri's energy landscape, has been presented to you on the PACE incentive program. I have attached the ordinance that'll need to be passed by the council in order for these initiatives to be eligible.

The ordinance has been reviewed and approved by our city attorney.

RECOMMENDATION:

Approve the ordinance as submitted and authorize the Mayor to execute it.

AN ORDINANCE TO ENABLE THE CITY OF NEOSHO, MISSOURI TO JOIN SHOW ME PACE, PURSUANT TO SECTIONS §67.2800 TO §67.2835, RSMO, THE “PROPERTY ASSESSMENT CLEAN ENERGY ACT,” AND STATING THE TERMS UNDER WHICH THE CITY OF NEOSHO WILL CONDUCT ACTIVITIES AS A MEMBER OF SUCH DISTRICT.

WHEREAS, the 95th General Assembly of the State of Missouri has adopted the Property Assessment Clean Energy Act, Sections 67.2800 to 67.2835, Revised Statutes of Missouri (the "PACE Act"); and

WHEREAS, it is in the best interests of the health, safety, and welfare of the City of Neosho, Missouri (the “City”) and its residents to encourage the development, production, and efficient use of clean energy and renewable energy, as well as the installation of energy efficiency improvements to publicly and privately owned real property; and

WHEREAS, the primary intent of funding energy efficiency and renewable energy improvements pursuant to the PACE Act is to promote the public purposes described above; and

WHEREAS, Section §67.2810.1, RSMo authorizes one or more Municipalities (as defined in Section §67.2800.7, RSMo) to establish a Clean Energy Development Board to initiate and administer a Property Assessed Clean Energy (“PACE”) Program so that owners of qualifying property can access funding for energy efficiency improvements or renewable energy improvements to the properties located in such Municipalities; and

WHEREAS, on June 15, 2015, a clean energy development board named Show Me PACE was created with the intention that all Municipalities (as defined in the PACE Act) within the State of Missouri would be eligible to join and participate by approving an appropriate ordinance or resolution; and

WHEREAS, it is in the best interests of City of Neosho, Missouri and its residents to join and participate in Show Me PACE.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF CITY OF NEOSHO, MISSOURI, AS FOLLOWS:

SECTION 1: The City hereby approves and authorizes joining and participating in Show Me PACE based on the following:

A. ATitle and Definitions.

1. *Title.* This Ordinance shall be known and may be cited as “Neosho, Missouri Property Assessed Clean Energy Ordinance.”
2. *Definitions.* Except as specifically defined below, words and phrases used in this Ordinance shall have their customary meanings. Words and phrases defined in Section 67.2800.2 of the Missouri Revised Statutes, as amended, shall have their defined meanings when used in this Ordinance. As used in this Ordinance, the following words and phrases shall have the meanings indicated.
 - a. “Show Me PACE” or “District” means the Show Me PACE Clean Energy Development Board.
 - b. “PACE Assessment” means a special assessment made against qualifying property in consideration of PACE Funding.
 - c. “PACE Funding” means funds provided to the owner(s) of Qualifying Property by the District for an energy efficiency, water conservation or renewable energy improvement.
 - d. “Qualifying Property” means commercial property, property owned by not-for-profit entities, agricultural property, and property owned by civic entities located within the City of Neosho, Missouri that satisfies the criteria set forth in the PACE Act as defined and provided under Sections § Sections 67.2800 to §67.2835, RSMo.

B. Program Administration. Show Me PACE shall administer the functions of a PACE program within the City:

1. providing property owners with an application to apply for PACE Funding;
2. developing standards for the approval of projects submitted by Qualifying Property owners;
3. reviewing applications and selecting qualified projects;
4. entering into Assessment Contracts with Qualifying Property owners;
5. providing a copy of each executed Notice of Assessment to the Newton County Assessor and causing a copy of each such Notice of Assessment to be recorded in the real estate records of the Recorder of Deeds for Newton, County, Missouri.;

6. authorizing and disbursing PACE Funding to the Qualifying Property owners;
7. receiving the PACE Assessment from the Newton County Collector;
8. recording any lien, if needed, due to nonpayment of a PACE Assessment; and
9. exercising all powers granted by Section 67.2810.2 of the Missouri Revised Statutes, as amended, including, but not limited to, the power to levy and collect the PACE Assessment pursuant to an Assessment Contract with a Qualifying Property owner.

C. Liability of City Officials; Liability of City. Notwithstanding any other provision of law to the contrary, officers and other officials of the City of Neosho, Missouri shall not be personally liable to any person for claims, of whatever kind or nature, under or related to the City's participation in the PACE program, including, without limitation, claims for or related to uncollected PACE Assessments. The City of Neosho, Missouri has no liability to a property owner for or related to energy savings improvements funded under a PACE Program. Pursuant to the PACE Act, the District is a separate political subdivision and is not a unit of the City.

D. Existing Laws Not Superseded. Any project or improvement at any Qualifying Property which is funded in whole or in part of PACE Funding shall be subject to all ordinances, rules and regulations in effect at that time.

E. City of Neosho as a Non-Party. Neosho, Missouri shall not be a party to any PACE Funding agreement, loan, or other commitment, however denominated, executed between the District and the owner(s) (or their representatives, together with any successors and assigns) of any Qualifying Property.

SECTION 2: , Missouri declares its intent that the provisions of this Ordinance shall be in conformity with federal and state laws. The City enacts this Ordinance pursuant to Sections 67.2800 to 67.2835 of the Missouri Revised Statutes, as amended.

SECTION 3: The City of Neosho, Missouri does hereby request that it be approved by the Board of Directors of Show Me PACE as a duly authorized participant in the District. The City hereby approves the Show Me PACE Cooperative Agreement among the District and the participating Municipalities in substantially the form attached hereto as **Exhibit A** (the "Cooperative Agreement"). The Mayor of the City of Neosho is hereby authorized and directed to execute the Cooperative on behalf of the City.

SECTION 4: The election of City of Neosho, Missouri to join the District shall in no way constitute an obligation of the City necessitating any corresponding appropriation.

SECTION 5: The City Clerk is hereby authorized to deliver a duly executed copy of this Ordinance to the Board of Directors of the District or its designee, together with the jurisdictional and geographic boundaries of the City for inclusion in the jurisdictional and geographic boundaries of the District.

SECTION 6: The officials and agents of the City are hereby authorized and directed to, take such actions and execute such other documents, certificates and instruments as may be necessary or desirable to carry out and comply with the intent of this Ordinance.

SECTION 7: This Ordinance shall be in full force and effect from and after its passage and approval.

PASSED BY THE [_____] THIS ____ DAY OF _____, 2024.

Richard Davidson, Mayor

APPROVED BY THE [_____] THIS ____ DAY OF _____, 2024.

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

EXHIBIT A

SHOW ME PACE COOPERATIVE AGREEMENT

THIS COOPERATIVE AGREEMENT (“Cooperative Agreement”) is made and entered into by Show Me PACE, a Missouri clean energy development board (“Show Me PACE”) and the municipalities of the State of Missouri that, from time to time, may execute this Cooperative Agreement (each, a “Municipality,” and together, the “Municipalities”).

RECITALS

WHEREAS, on [REDACTED], 2024, the (governing body) of City of Neosho] adopted Ordinance No. [REDACTED], authorizing participation in Show Me PACE, pursuant to Sections 67.2800 to 67.2835 of the Revised Statutes of Missouri (the “PACE Act”); and

WHEREAS, pursuant to Section 67.2810 of the PACE Act, more than one municipality may form a clean energy development board; and

WHEREAS, clean energy development boards serving more than one municipality are in the best interest of the participating municipalities because it allows for economies of scale and concentrations of expertise that will benefit the approval, financing and installation of energy efficient and renewable energy improvements pursuant to the PACE Act; and

WHEREAS, other municipalities may participate in Show Me PACE by adoption of an ordinance in accordance with the PACE Act and execution of this Cooperative Agreement.

AGREEMENT

NOW THEREFORE, in consideration of each municipality’s participation in Show Me PACE, each Municipality hereby agrees as follows:

- 1. Representations.** Each Municipality has taken all legislative actions necessary to approve such Municipality’s participation in Show Me PACE.
- 2. Approval of Bylaws.** The current bylaws of Show Me PACE (the “Bylaws”) have been provided to the Municipality and the Municipality approves such Bylaws.
- 3. Board of Directors.** The members of the Board of Directors of Show Me PACE shall be appointed in the manner described in the Bylaws.

4. Clean Energy Development Board Powers. Each Municipality agrees that Show Me PACE is authorized to exercise all clean energy development board powers permitted by the PACE Act or other statute within the boundaries of the Municipality.

5. Counterparts. This Cooperative Agreement is intended to be signed in counterparts as Municipalities, from time to time, elect to participate in Show Me PACE. No action from any Municipality already participating in Show Me PACE shall be required for a new Municipality to participate in Show Me PACE.

6. Withdrawal. No Municipality shall withdraw from participation in Show Me PACE if such withdrawal will impact any existing property assessment clean energy financing undertaken by Show Me PACE in the Municipality's boundaries. However, a Municipality may request, in writing, that Show Me PACE no longer undertake clean energy financing in the Municipality's boundaries, and upon receipt of written notice, Show Me PACE shall no longer undertake any clean energy financing in the municipalities boundaries.

IN WITNESS WHEREOF, Show Me PACE and the Municipalities have caused this Cooperative Agreement to be executed as of the dates shown below:

Date: _____, 2024

SHOW ME PACE

By: _____
Josh Campbell, Administrator.

Date: _____, 2024

City/County of Neosho

Adopted Ordinance No. ____ joining
Show Me PACE on ____ __, 2024

By: _____
Name: Richard Davidson
Title: Mayor, City of Neosho

SHOW ME PACE

Clean Energy District



238 East High St.,
3rd Floor
Jefferson City, MO 65101
573-616-1046
jan@moenergy.org
www.ShowMePace.org

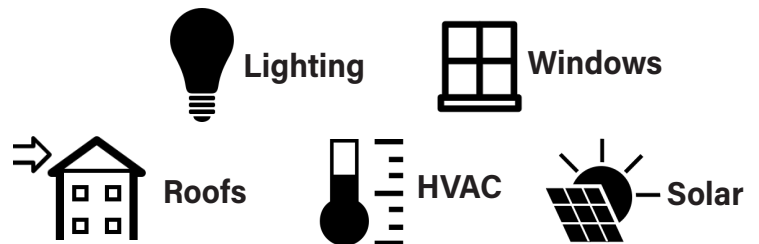
PACE = Property Assessed Clean Energy

Economic development through open-market financing for energy efficiency and renewable energy projects

PACE financing is all private funds - no taxpayer money used

PACE financing is available for:
residential, commercial,
industrial, agricultural,
non-profit, and
public properties

Eligible projects



Annual energy savings must exceed cost of the project
increases cash flow and value of the building

Role of local government

State statute requires a municipality to pass an ordinance in order for Show Me PACE Clean Energy District* to operate in that jurisdiction. (Municipalities may belong to more than one clean energy district.)

Municipalities participate in PACE to promote economic development, create jobs and save energy in their community.

There is NO obligation, exposure or liability for the municipality.

To avoid placing a burden on county collectors, Show Me PACE uses third-party collection of the annual assessment.

Each participating municipality has the option to appoint a representative to serve on the Show Me PACE Advisory Board which meets annually.



*Show Me PACE Clean Energy District is a political subdivision

Financing provided by Show Me PACE funding partners:



- can pay for 100% of a project's costs
- is all private capital - no taxpayer funds
- is on-demand cash
- has a fixed interest rate
- is repaid with an annual assessment up to 20 years
- is considered "off-book" on a firm's balance sheet
- does not require personal guarantees or out-of-pocket equity investment
- can stay with the building upon sale
- doesn't require first payment for 12-24 months

Financing approvals are simple! To qualify, PACE projects must:



- ☒ be permanently affixed to the property
- ☒ reduce energy or water consumption or create renewable energy on the property
- ☒ save more money than the cost of project
- ☒ be located in a participating municipality

Consumer Protections required by the Missouri PACE Act

- 1) PACE projects can only be approved when the estimated **economic benefit** expected from the project during the financing period is equal to or **greater than the cost of the project**.
- 2) PACE projects can only be approved when there are **sufficient resources to complete the project**. Show Me PACE requires the following to meet that requirement: **no real estate delinquencies** in past 3 years, **no default or foreclosure** against property in past 5 years and **no bankruptcy** in past 5 years.
- 3) Money for PACE projects is **kept in escrow** to ensure funds only go for intended improvements.
- 4) Assessment contracts must be recorded with the County Recorder of Deeds.

Additional protections with Show Me PACE

On all commercial projects, Show Me PACE **requires consent of the primary mortgage holder**. The Loan-to-Value ratio must be less than 90% and PACE Loan-to Value ratio must be less than 25%.

Show Me PACE Lenders



PETROS PACE
FINANCE

TWAIN
FINANCIAL PARTNERS



PACE Equity

DIVIDEND



CLEANFUND
Commercial PACE Capital

What makes Show Me PACE unique?

- open market program
- on-demand cash
- nonprofit with low fees
- requires lender consent
- third-party collection
- transparent operation

Show Me PACE fees*

\$50,000 - \$500,00 = 1.25%

>\$500,000 = 1%, w/ \$20,000 cap**

Annual collection capped at \$500

* for standard projects

** cap raised to \$30,000 effective 1/1/18

For more information:

visit www.showmepace.org or contact Program Manager Jan Schumacher jan@moenergy.org, 573-616-1046

SHOW ME PACE



is a clean energy district administered by the Missouri Energy Initiative, a nonpartisan, nonprofit association of public and private sector energy entities. MEI works to increase support for energy-related economic development, innovation and education.

MEI
MissouriEnergyInitiative

REQUESTED COUNCIL MEETING DATE: January 16, 2024**ITEM:** Bill No. 2024-03: Storm-water Code Change

ORIGINATING DEPARTMENT: Development Services Department**ATTACHMENT:**

1. Bill No. 2024-03 Amend Ch. 430 Stormwater; 430.050 430.140 and 430.186
 2. Neosho Stormwater Management Criteria
-

PURPOSE:

The staff has been working to bring the city's stormwater permit up to date to be in compliance with Missouri DNR requirements.

BACKGROUND:

At the recommendation of the city engineers this ordinance change will:

1. *Require detention basins to be designed for both the larger and the smaller storms. Design of detention basins to meet the pre-project peak flowrates for the 2-, 10-, and 100-year storm events is the industry minimum.*
2. *Remove of Section 430.186 – The requirements of MCM 4 and MCM 5 of the MS4 permit necessitate a more complicated process than listed here when a developer/builder is applying for a Neosho Land Disturbance Permit. (Simply relying on the State Land Disturbance Permit is no longer enough.) Procedures for acquiring a Neosho Land Disturbance Permit (Section 430.184) will be set forth in the proposed Stormwater Management Criteria Manual. The permit application will require pre-construction plan review (which is already required by Chapter 430 Article III) for compliance with existing erosion and sediment control requirements, as well as the water quality requirements that will be adopted with the Criteria Manual.*
3. *New Section adopting Neosho's Stormwater Management Criteria manual. The MS4 Permit requires permanent water quality protection for all sites that disturb 1 acre or more. This stormwater design manual contains the minimum standards for water quality.*

RECOMMENDATION:

City staff recommends that the council approves the ordinance update.

AN ORDINANCE of the City of Neosho amending Chapter 430 Stormwater Runoff Management, by enacting a new Section 430.050 Stormwater Management Criteria Manual, and by repealing and replacing paragraph (A)(7) of Section 430.140 Final Stormwater Runoff Management Plan, and by repealing and replacing Section 430.186 Permit Application of the Code of Ordinances for the City of Neosho.

WHEREAS, the Missouri Department of Natural Resources (“Mo DNR”) requires certain new regulations in regards to Missouri Separate Storm Sewer System (“MS4”); and

WHEREAS, the City Council for the City of Neosho desires to enact any required new regulations of Mo DNR and MS4 compliance.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That Chapter 430 Stormwater Runoff Management of Title IV Land Use, Article I Introductory Provisions is amended by enacting a new Section 430.050 Stormwater Management Criteria Manual to read as follows:

“Section 430.050 Stormwater Management Criteria Manual”

“The City of Neosho, Missouri does hereby adopt the City of Neosho, Missouri, Stormwater Management Criteria Manual, as filed with the City Clerk at the time this Ordinance is adopted (02-06-2024), to provide for stormwater management within the City of Neosho, Missouri, also referred to herein as “Design Criteria” and/or “Criteria Manual.” Revisions of the Stormwater Management Criteria Manual may be updated and incorporated herein by the City Council upon passage of Ordinances to the same effect. Said Criteria Manual shall be the final word and control as to the stormwater design and requirements by the City of Neosho, Missouri.”

Section 2. That Chapter 430 Stormwater Runoff Management of Title IV Land Use, Article III Procedure for the Submission, Review and Approval of Stormwater Runoff Management Plan is amended by repealing and replacing paragraph (A)(7) of Section 430.140 Final Stormwater Runoff Management Plan to read as follows:

“Section 430.140 Final Stormwater Runoff Management Plan”

“A. 7. For all detention basins, if any, peak inflow and outflow flowrates for the 2-, 10-, and 100-year storm events, for both pre-development and proposed conditions. Proposed peak flowrates leaving the site must not exceed corresponding pre-project peak flowrates.”

Section 3. That Chapter 430 Stormwater Runoff Management of Title IV Land Use, Article V Bonds, Maintenance Assurances and Land Disturbance Permits is amended by repealing and replacing Section 430.186 Permit Application to read as follows:

“Section 430.186 Permit Application”

“All land disturbance permits shall be issued pursuant to the Stormwater Management Criteria Manual, including any revisions of said Criteria Manual.”

Section 4. This Ordinance shall be effective , 2024.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this _____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

NEOSHO, MISSOURI

STORMWATER MANAGEMENT CRITERIA



ALLGEIER, MARTIN and ASSOCIATES, INC.

Consulting Engineers and Surveyors

December 12, 2009

Stormwater Management Criteria

Prepared for:

Neosho, Missouri



Prepared by:

ALLGEIER, MARTIN and ASSOCIATES, INC.
Hydro Division

December 12, 2009

**CITY OF NEOSHO, MISSOURI
STORMWATER MANAGEMENT CRITERIA**

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* * * * *

Acknowledgements

This manual is adapted from the Joplin, Missouri and Carl Junction, Missouri “Stormwater Management Criteria” prepared by Burns and McDonnell, 1998, revised May 2003, and from “Greene County Storm Water Design Standards” prepared April 1999.

1.0 GENERAL

1.1 Introduction: This document provides uniform procedures for designing and checking the design of storm drainage systems under the rainfall and land characteristics typical of Neosho, Missouri. Specific criteria have been developed and are applicable to the types of drainage systems and facilities ordinarily encountered in local urban and suburban areas. Other special situations may be encountered that require added criteria or more complex technology than included herein. Any design procedure conforming to current accepted engineering practice, including the application of computers, may be used for the design of storm drainage system in lieu of the computation methods presented in these criteria providing equivalent results are obtained.

1.2 Applicability: These criteria are applicable to all new storm drainage systems and facilities and to the rehabilitation of existing drainage system facilities.

1.3 General Requirements: The design shall be accomplished under the direction of a Registered Professional Engineer. The design shall also be based on land use in the tributary area as zoned, actually developed, or indicated by the City's current comprehensive land use plan, whichever basis produces the greatest runoff.

1.4 Definitions/Abbreviations:

- A. **Annual Probability (AP):** The probability, likelihood, or chance, of the magnitude of a storm event of a specified duration, being equaled or exceeded in any given year. Usually expressed as a percentage.
- B. **Bank Line:** The line of intersection, above the normal depth of flow at design capacity, of the side slope of an open channel and the adjacent ground.
- C. **BMP:** Best Management Practice.
- D. **CFS:** Cubic feet/foot per second.
- E. **City:** The City of Neosho, having jurisdiction and authority to govern.
- F. **City Engineer:** The municipal public works engineer or official having jurisdiction and authority to review and approve plans and designs for storm drainage systems.
- G. **Developer:** Any person, partnership, association, corporation, public agency, or governmental unit proposing to engage or currently engaged in "development" as defined below excluding the widening, resurfacing, or other improvement to existing streets, alleys, and sidewalks.
- H. **DCIA:** Directly Connected Impervious Area.
- I. **Diversions:** Discharge or conveyance of stormwater to a watershed other than the watershed of origination.
- J. **Development:** Any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, pavement, filling, grading or storage of equipment or materials.
- K. **Easement:** Authorization by a property owner for the use of any designated part of the property by another for a specified purpose.

- L. **FEMA:** Federal Emergency Management Agency.
- M. **Floodplain:** The normally dry land adjoining rivers, streams, lakes or other bodies of water that is inundated during flood events. In order to provide a standard national procedure for floodplain management, the U.S. Federal Emergency Management Agency (FEMA) has adopted the 1% Annual Probability (AP) flood as the base flood.
- N. **Floodway:** The channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment in order for the 1% AP flood to be carried without substantial increase in flood heights. FEMA's easements preclude any improvement to the land occupied by the easement.
- O. **Flowage Easement:** Easement acquired for the right to periodically use an open channel and its overbank floodway, or the overflow channel above an enclosed system element, to convey drainage. Flowage easements preclude any improvement to the land occupied by the easement.
- P. **Freeboard:** The difference in elevation between the top of a structure, such as a dam or open channel, and the maximum design water surface elevation or high water mark. It is an allowance against overtopping by waves or other transient disturbances.
- Q. **Improved Channel:** Any new open channel which has been constructed or existing channel which has been changed by grading or by the construction of lining materials.
- R. **MDNR:** Missouri Department of Natural Resources.
- S. **Natural Channel:** An existing channel that has not been altered by previous construction.
- T. **Owner:** The owner of record of real property.
- U. **Registered Professional Engineer:** A licensed engineer who is registered with and authorized by the Missouri Board for Architects, Professional Engineers and Professional Land Surveyors to practice.
- V. **Return Period:** Also referred to as return frequency or recurrence interval. A statistical term for the average frequency that a given event may be expected to occur although it does not imply that the event will occur regularly at even intervals. It can also be defined as the reciprocal of the annual probability of an event. For example, a 50-year storm has a probability of $1/50 = 0.02$ (2% AP) of occurring in any given year.
- W. **Site:** A tract, or contiguous tracts, of land owned and/or controlled by a developer or owner. Platted subdivisions, industrial and/or office-commercial parks, and other planned unit developments shall be considered a single site.
- X. **Storm Drainage System:** All of the natural and man-made facilities and appurtenances such as ditches, natural channels, swales, pipes, culverts, bridges, open improved channels, street gutters, inlets, and detention facilities which serve to convey surface drainage.
- Y. **Storm Water Detention Facility:** Any structure, device, or combination thereof with a controlled discharge rate less than its inflow rate.
 - a. **Controlled Area:** That part of the tributary area for which a detention facility is designed to control peak discharge rates.

- b. Detention Storage: The volume occupied by water between the levels of the principal and emergency spillway crests during operation of the facility.
- c. Dry Detention Facility: Any detention facility designed to permit no permanent impoundment of water.
- d. Emergency Spillway: A device or devices used to discharge water under conditions of inflow that exceed the design inflow. The emergency spillway functions primarily to prevent damage to the detention facility that would permit the sudden release of impounded water.
- e. Principal Spillway: A device such as an inlet, pipe, weir, etc., used to discharge water during operation of the facility under the conditions of the 1% AP or more frequent event.
- f. Private Detention Facility: Any detention facility controlling discharge from a site wholly owned and controlled by one owner or entity and not platted for future subdivision of ownership. Also, all facilities incorporating detention storage of stormwater in or on areas also used for other purposes such as parking lots, building or structure roofs, and open channels. Private detention facilities may be located off-site with approval of the City Engineer contingent upon documentation that drainage easements have been obtained for both the detention basin and the channel connecting the provisions for maintenance of the facilities.
- g. Public Detention Facility: Any detention facility controlling discharge from a tributary area owned by more than one owner and/or platted for future subdivision of ownership, except as defined as private detention facility herein.
- h. Regional Detention Facility: Any detention facility designed and located to provide detention on major drainage channels and with a tributary area of 100 acres or greater.
- i. Sediment Storage: The volume allocated to contain accumulated sediments within the detention facility.
- j. Wet Detention Facility: A detention facility that is designed to include permanent storage of water in addition to the temporary storage used to control discharge rates from the facility.

Z. Tributary Area: All land draining to the point of consideration, regardless of ownership.

1.5 Design Probabilities: All enclosed and improved open channel conveyance system components shall be designed for the 10% AP peak flow or the capacity of the existing upstream improved system, whichever is greater with the following exceptions:

- 1. Facilities located within the Federally designated floodway of the 1% AP floodplain shall be designed for the 1% AP peak flow.
- 2. Bridges, pipes and culverts crossing arterial streets shall be designed for the 2% AP peak flow, unless subject to the requirements of No. 1, above.
- 3. With consent of the City Engineer.

1.6 System Types and Applications:

A. Enclosed Pipe-Inlet Systems: Enclosed systems consisting of underground pipes, culverts, curb inlets and similar functional underground structures shall be used to convey stormwater under the following conditions.

- 1. Within the right-of-way of improved streets, regardless of system design capacity.
- 2. In all areas other than residential where the bank line of an open channel, either natural or improved, would be within 30 feet of any existing or proposed habitable structure, regardless of system design capacity.
- 3. In residential areas where the bank line of an open channel, either natural or improved, would be within 60 feet of any existing or proposed residential structure.

Enclosed systems may be used to convey stormwater at all locations where open systems are permitted.

- B. Improved Channels:** Open systems consisting of improved open channels with intermittent culverts or bridges crossing streets and other surface areas may be used to convey stormwater in all areas except those excluded in the previous section. Lining of an improved channel is required in all developed areas where the 10% AP design discharge is equal to or greater than 200 CFS and less than or equal to 500 CFS.
- C. Natural Channels:** Existing natural channels may be retained in the drainage system of a developed area where the 10% AP peak discharge exceeds 500 CFS subject to the same exclusions as improved channels and with the additional requirement that the flow velocity of the 99% AP peak discharge does not exceed the following based on soils present in the channel bed and bank. Where design velocity exceeds the maximum, the channel should be improved as necessary or an enclosed system constructed.

<u>Soil Type</u>	<u>Max. Velocity of 1-Yr Peak Flow (fps)</u>
Fine sand, sandy loam	2
Silt loam, noncolloidal silts	3
Colloidal clays & silts, fine gravel	4
Coarse gravel, cobbles	5
Shale	6
Limestone bedrock	15

Additional easement and bank stabilization requirements are outlined in Sections 3.2 and 9.0, respectively.

- D. Overflow Systems:** As an integral part of the stormwater drainage system, whether enclosed or open, overflow channels shall be required in all areas in addition to, and above, the 10% AP conveyance elements. Each overflow component shall have sufficient hydraulic capacity, when combined with the capacity of the conveyance element, to convey the 1% AP peak discharge without damage to land or buildings.
1. The combined conveyance system shall provide sufficient capacity so that the 1% AP stage, plus 1 foot of freeboard, is at an elevation equal to or below the lowest elevation at which water may enter any proposed or existing building or structure.
 2. An overflow depth not exceeding seven (7) inches at the lowest point of the traveled way will be permitted where culverts cross streets.
 3. Permissible concurrent surface uses of overflow areas include lawns, gardens or other open uses; vehicular parking; or any other use not permanently obstructing the floodway.
 4. Prohibited concurrent surface uses include fencing; structures such as sheds, garages or outbuildings; materials storage; or any other use obstructing the floodway.
- E. Stormwater Detention Facilities:** Detention facilities shall be provided in connection with the development of land. Public and private detention facilities may be either wet or dry. Joint uses, such as parking and recreation, not interfering with detention functions are permitted for dry facilities. Rooftop and parking lot detention are acceptable for private facilities only.

- 1.7 Existing Drainage System:** Existing drainage system component pipes, structures, and appurtenances within the project limits may be retained as elements of an improved system providing:

1. They are in sound structural condition.
2. Their hydraulic capacity, including surcharge, is equal to or greater than the capacity required by these criteria.
3. Easements exist or are dedicated to allow operation and maintenance.

Discharge from an existing upstream storm drainage system shall be computed in accordance with the requirements of these criteria. The computed discharge shall be used to design the new downstream system even though the actual capacity of the existing upstream system may be less.

1.8 Waivers: The City Engineer may waive specific criteria or requirements to provide specific types of stormwater facilities as follows:

A. Detention Facilities: Provision to provide detention may be waived in part or in whole provided one or more of the following are met:

1. Development is to discharge within a Federal Insurance Study defined 1% AP floodplain
2. Developer provides downstream improvements to meet the tributary area peak discharge requirements to the satisfaction of the City Engineer
3. Development cannot be fully and/or practically served by surface or underground detention facilities
4. It is shown that construction of detention facilities will result in an increase of peak flow in the drainageway

If detention requirement is waived for one of the above reasons, a pro-rated fee of \$8,500.00 per acre for R1 type development and \$11,600.00 per acre for all other development will be charged for all undetained areas. The fee will be adjusted at a rate of +3% per year with the first adjustment occurring on January 1, 2009. The fee may be offset by the construction of downstream improvements. The improvements must be approved by the city engineer, and the cost of such improvements will be set by the city engineer.

For the following development, detention is not required:

1. Additions to, improvements, and repair of existing single-family and duplex dwellings.
2. Construction of any buildings, structures, and/or appurtenant service roads, drives, and walks on a site having previously provided storm water control as part of a larger unit of development.
3. Additions, remodeling, repair, replacement, and improvements to any existing structure or facility and appurtenances that does not cause an increased area of impervious surface on the site in excess of 1,000 square feet of that previously existing.
4. Construction of any one new single-family or duplex dwelling unit, irrespective of the site area on which the same may be situated.

B. Overflow Channels: In previously developed areas, requirements to provide for 1% AP storm conveyance by means of overflow channels may be reduced in circumstances where 1% AP protection is not reasonably attainable due to the location of damageable improvements with respect to the drainage system.

1.9 Amendments: The City Engineer may amend this criteria as he deems necessary.

1.10 Other References: Other agencies have technical and administrative criteria and regulations pertaining to the design, permitting and operation of drainage systems which are in addition to and

which may complement these criteria. When conflicts are encountered, the most rigorous criteria shall govern. Some of the more important references used in the preparation of this document include:

- A. American Public Works Association (APWA) Standard Specifications and Design Criteria:** The design criteria in this document is largely based upon national drainage standards outlined in American Public Works Association (APWA) "Standard Specifications and Design Criteria," and on Greene County, Missouri, Stormwater Design Standards modified to meet the City's requirements. Other specific references are contained throughout this document. The Criteria and Technical Design Aids contained in the Appendix provide specific references to their sources.
- B. Federal Insurance Agency - Floodplain Regulations and Implementing Ordinances Adopted by Municipalities:** Drainage systems designed within the limits of the designated 1% AP floodplain on the principal stream shall be designed to convey the flood as defined by applicable published floodplain information studies. For areas located in FIS Zone "A" outside the detailed study area, the developer shall prepare studies and calculations establishing the floodplain, elevation and width. These calculations shall be submitted to the reviewing agency for approval.
- C. Missouri Department of Natural Resource:** Rules and regulations of the Department of Natural Resources dealing with such issues as stream obstructions, channel changes, dams, and permits shall apply.

2.0 HYDROLOGIC CRITERIA AND METHODS

2.1 Scope: This section sets forth the hydrologic methods and parameters to be used for computations of runoff and peak rates to be accommodated by the storm drainage system.

2.2 Computation Methods for Runoff. Runoff rates to be accommodated by each element of the proposed storm drainage system shall be calculated using the criteria for land use runoff factors, rainfall, and system time outlined in the following sections. Computer models may be utilized so long as they produce calculated runoff to the system that is substantially the same as that calculated by the following criteria.

A. Rational Method: The Rational Method may be used to calculate peak rates of runoff to elements of enclosed and open channel systems, including inlets, when the total upstream area tributary to the point of consideration is less than 40 acres and does not include detention facilities. The Rational Method is defined as follows:

$Q = C i A$, where:

Q = Peak rate of runoff to system in C.F.S.

C = Runoff Coefficient (from Table C)

i = Rainfall intensity in inches per hour

A = Tributary drainage area in acres, The tributary area is either the total upstream tributary area or the total upstream tributary directly connected impervious area.

Rainfall intensity, used only for the Rational Method, shall be as indicated in Table A corresponding to the calculated time of concentration for either the total tributary area or the directly connected impervious area. The greater of the computed flow rate for a) the total tributary area or b) the directly connected tributary area shall be used for design.

B. Hydrograph Methods: The application of hydrograph methods is required for all conveyance systems having greater than 40 tributary acres and for all detention facilities. Computer models or manual methods are permissible.

1. Acceptable computer models

- a. SCS Technical Release No. 55 (TR-55) - "Urban Hydrology for Small Watersheds," 2nd Edition, June, 1986.
- b. SCS Technical Release No. 20 - "Project Formulation - Hydrology," 2nd Edition, May 1983.
- c. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-1 Flood Hydrograph Package," Version 4.1, June, 1998.
- d. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-HMS, Hydrologic Modeling System," Version 3.3, (or newer) October 2008.

Copies of the above are available for purchase through National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA., 22161. The HEC-1 and TR-55 packages are also available through PC-TRANS Software Distribution Service, University of Kansas Transportation Center, 2011 Learned Hall, Lawrence, Kansas, 66045 and a number of other private software. U.S. Army Corps of Engineers programs are available for free from the Hydrologic Engineering Center web page.

C. Rainfall: Rainfall data for runoff computations are presented in Table B. For Hydrograph methods, rainfall shall be distributed in time using the appropriate Huff's Quartile distribution.

2.3 Runoff Coefficients: Runoff coefficients relative to development and land use shall be as indicated in Table C. The indicated "C" values are applicable to the Rational Method and the "CN" values to hydrograph methods.

The runoff coefficients given in Table C are appropriate for 20% or 10% AP events. Estimation of peak flows for less frequent storms requires the use of a higher runoff coefficient because infiltration and other abstractions have proportionately less effect on the amount of rainfall that becomes runoff. To obtain runoff coefficients for other frequency events, the "C" value from Table C is multiplied by a frequency correction factor. The frequency correction factor is 1.10 for the 4% AP event, 1.20 for the 2% AP event, and 1.25 for the 1% AP event. However, the resulting runoff coefficient (original "C" multiplied by the frequency correction factor) may not be greater than 0.98.

Coefficients shall be based on the more runoff-intensive surface condition of either planned future land use or existing developed land use. Future land use shall be defined by the City's adopted comprehensive land use plan.

Undeveloped areas not zoned, but for which future land use is defined by the City's land use plan, shall be assigned runoff coefficients for the land use indicated by such plan. Undeveloped areas designated as agricultural or those for which no specific future land use is indicated shall be assigned a minimum of 35 percent impervious surface for purposes of the design of storm drainage systems.

As an alternative to the coefficients and for areas not listed in Table C, a composite runoff coefficient based on the actual percentages of pervious and impervious surfaces shall be used.

2.4 Time of Concentration (T_c): The time of concentration, T_c , for hydrograph method analysis shall be calculated as the sum of the overland flow time, and the channel flow (travel) time. The time of concentration, T_c , for the rational method shall be calculated as the channel travel time as described in 2.4.B, below. The total T_c shall not be less than 5.0 minutes regardless of the calculated time.

A. Overland Flow Time: For Hydrograph methods only. Overland flow time is determined using the Kerby-Hathaway equation. The maximum sheet flow distance for calculations shall not be greater than 200 feet in developed areas and 300 feet in undeveloped areas.

$$T_{OL} = \left(\frac{0.667 \cdot n \cdot L_{OL}}{\sqrt{S_{OL}}} \right)^{0.467}$$

Where: T_{OL} is the overland flow time in minutes

n is the overland flow roughness coefficient shown in Table 1

L_{OL} is the representative length of the overland flow path in feet

S_{OL} is the slope of the overland flow path in feet/foot

B. Channel Flow (Travel) Time: Determined from Kirpich equation. The "system" includes flow in street gutters, street ditches, enclosed pipe or box storm sewers, and improved or natural open channels.

$$T_{CH} = 0.0078 \cdot L_{CH}^{0.77} S_{CH}^{-0.385}$$

Where: T_{CH} is the channel flow time in minutes

L_{CH} is the length of channel flow in feet. For hydrograph methods, L_{CH} is measured from the end of the hydraulically most remote overland flow path to the point of interest. For the Rational method, L_{CH} is measured from a) the hydraulically most remote point on the drainage divide to the point of interest or b) the hydraulically most remote point of the directly connected impervious area to the point of interest.

S_{CH} is the slope of L_{CH} in feet per foot.

- C. Lag Time:** For use in the SCS Dimensionless Unit Hydrograph method, lag time shall be equal to 60 percent of the time of concentration ($0.6 \times T_C$).

3.0 EASEMENTS

3.1 General Requirements: Developers shall be required to dedicate (plat) easements for all system components to be maintained by the City including enclosed pipe systems, improved channels, and public detention facilities as well as maintenance access connections to street rights-of-way. Easements are also required, although not for City maintenance purposes, along open channels and around private detention facilities as indicated below and in all other areas deemed necessary by the City Engineer.

3.2 Permanent Drainage Easement Requirements:

A. Enclosed Systems: 15 feet minimum width or the structure/pipe O.D. plus 6 feet on each side.

B. Improved Channels: 30 feet minimum width or the top of bank width plus 10 feet on each side. The top of one bank shall have a minimum 10-foot wide strip graded for vehicle access with a maximum slope of 12 percent perpendicular to the contours.

C. Detention Facilities: 15 feet clear of any structure and 10 feet clear around the perimeter of the greatest of 1) the top of bank lines, 2) the 1% AP water-surface contour, or 3) 1 foot outside of security fences.

3.3 Access Easements: For facilities which are the City's responsibility, access easements for maintenance shall be connected to public street rights-of-way and shall not be spaced greater than 800 feet apart, public detention facilities. The maximum slope perpendicular to the contours shall be 12 percent. Access easements shall extend to the bottom of all improved channels with bottom widths greater than 7 feet and to the top of bank for narrower channels. These easements may overlay other permanent easements subject to maximum grade requirements.

3.4 Flowage Easements: Flowage easements shall be required in addition to and overlaying other permanent easements where applicable, including other public and private utility easements, where the 10% AP peak discharge exceeds 100 CFS. The flowage easement shall cover the overflow area for the conveyance element, whether open channel or enclosed system, determined as the 1% AP flood elevation plus one foot. Flood elevations shall be on file with the City and easement lines indicated on plats or permit plans. Limitations on permanent obstructions shall be included in the dedication with all other concurrent uses reserved to the property owner.

3.5 Natural Channels: For natural channels retained in the storm drainage system, permanent easements for undeveloped green space including the channel itself, shall be platted at a width of the 1% AP flood plain boundary plus 10 feet, or the top of bank width of the channel plus 10 ft. on each side, whichever is greater. (See Figure 3 for illustration.) These easements will be dedicated to the City but maintenance of the green space and the channel will be the responsibility of the individual property owner.

In lieu of dedicating the specified width of easement, bank stabilization may be constructed along the channel. For stabilized channels, easement requirements shall be the same as for improved channels. Refer to Section 9.0 for additional information on bank stabilization.

4.0 HYDRAULIC CALCULATION METHODS

4.1 Pipes and Open Channels: Flow shall be calculated by Manning's equation.

$$Q = \frac{A (1.486) (R^{2/3}) (S^{1/2})}{n}, \text{ where:}$$

Q = Discharge in cubic feet per second.

A = Cross sectional area of flow in square feet.

n = Roughness coefficient (see Table F).

R = Hydraulic radius (R = A/P) in feet.

S = Slope in feet per foot.

P = Wetted perimeter in feet.

Head losses, except friction losses, shall be calculated by

$$h = k (V^2/2g)^{1/2}, \text{ where:}$$

h = Head loss in feet.

V = Velocity of flow in feet per second at point of interest.

2g = 64.4 feet per second.

k = Coefficient (as shown in Table G).

4.2 Street Gutters: Flow shall be calculated by Izzard's formula, below. Figure 4 indicates a graphical solution for the formula.

$$Q = \frac{0.56 (Z) (S^{1/2}) (D^{8/3})}{n}, \text{ where:}$$

Q = The gutter flow in cubic feet per second.

Z = The reciprocal of the average cross-slope, including gutter section in feet per foot.

S = The longitudinal street grade in feet per foot.

D = The depth of flow at curb face in feet.

n = Manning's "n" (see Table F).

The following formula shall be used to determine the street grade (Sx) at any point on a vertical curve for use in calculating gutter flow. Grades shall be "plus" when ascending forward and "minus" when descending forward with all grades in feet per foot.

$$S_x = S_1 + \frac{X}{L}(S_2 - S_1), \text{ where:}$$

S_x = The street grade on a vertical curve at point x.

S_1 = The street grade at the PC of a vertical curve.

S_2 = The street grade at the PT of a vertical curve.

X = The distance, in feet, from the PC of the curve to point x.

L = The total length of a vertical curve, in feet.

- 4.3 Head Losses:** The following values for head losses in inlets, manholes and junction boxes may be used for design.

<u>Structure</u>	<u>Head Loss (ft)</u>
Inlet - One exit pipe only	0.5
Inlet - Thru flow @ less than 45° angle (one entry & one exit line)	0.1
Inlet - Thru flow @ greater than 45° angle (one entry & one exit line)	0.2
Inlet - Two or more entering lines	0.3

- 4.4 Culverts:** Culvert flow capacity shall be calculated according to standard engineering practice.

- 4.5 Computer Methods:** Computer models may be used for hydraulic calculations. For open channels the following models are permissible.

1. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-2 Water Surface Profiles."
2. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-RAS River Analysis System."
3. Federal Highway Administration - "HY-7 WSPRO - A Computer Model for Water Surface Profile Computations."

5.0 ENCLOSED SYSTEM DESIGN

5.1 General Requirements: All enclosed drainage system components (pipes, culverts and structures except bridges) shall be structurally designed for an H-20 live load, a unit weight of 120 pcf for soil cover, and minimum lateral earth pressure of 40 pcf equivalent fluid pressure. The lateral earth pressure shall be increased as necessary for special conditions when present on a project.

5.2 Pipes and Culverts:

- A. Minimum Cover:** Minimum cover over all pipes and culverts shall be equal to 1.5 feet unless otherwise approved by the Director of Public Works.
- B. Minimum Size:** Minimum pipe size shall be 15-inch diameter.
- C. Downstream Conduit Size:** Conduit sizes, based on square feet of end area shall not decrease from upstream to downstream regardless of the calculated capacity of each conduit.
- D. Surcharge:** Surcharging of pipes under entrance control is permitted in structures subject to freeboard criteria for the structure and provision for pressure joints throughout surcharged lengths.
- E. Pipe Slopes:** Minimum invert slopes shall conform to the following:

Pipe Diameter (in)	Min. Invert Slope (%) for Round or Arch Pipe	
	RCP	CSP
15	0.32	0.64
18	0.26	0.52
24	0.17	0.34
30	0.13	0.26
36	0.10	0.20
42	0.08	0.16
48	0.07	0.14
54	0.06	0.12
60	0.05	0.10
72	0.05	0.10

5.3 Storm Sewer Inlets:

- A. Inlet Types:** Curb-opening inlets are preferred in street installations. Grated inlets may be used in addition to curb-opening inlets if necessary to control spread or depth of flow in the street. In off-street locations, only grated area-type inlets sized and designed for the specific location shall be permitted. Gutter deflectors shall be required for inlets installed on slopes greater than 4.0 percent.
- B. Configuration:** In street installations, the following dimensions apply to curb inlets.

Clear opening length	5.0 ft (min)
Clear opening height	5.0 in (min)
Clear inside width,	
perpendicular to curb line	3.0 ft (min)
Gutter depression depth at inlet	2.0 in (min)
Gutter transition length	
(a) Both sides in sump and upstream	

side on slopes	5.0 ft (min)
(b) Downstream side on slopes	3.0 ft (min)

C. Capacity: Inlet hydraulic capacity for new construction shall be determined from Table H for curb-opening inlets on slopes and from Figure 9 for curb-opening inlets in sumps. For area inlets in off-street locations, submit calculations based on specific inlet configuration, size, etc.

D. Location Requirements: Inlets shall be located along streets as required to limit the depth of flow in the gutters during the 10%AP discharge to the following:

<u>Street Class</u>	<u>Max. Width of Flow (ft)</u>
Undivided Streets (no median):	
<30 ft. back-to-back	10
30 to 35 ft. back-to-back	11
>35 ft. back-to-back	12
Divided Streets (with medians):	
Each directional roadway	As above
Intersections - all streets	6
Pedestrian Crosswalks - all streets	6

E. Freeboard Requirements: At inlets and other points of surface water entry into the enclosed drainage system, a minimum of 0.5-ft. shall be required between the peak design water surface elevation in the structure and the lowest elevation of the inlet opening. (Figure 10 illustrates the freeboard requirement). The water surface elevation in the structure shall be calculated as follows:

1. Invert elevation of the exit/outlet line (pipe), plus;
2. Depth (diameter) of the exit/outlet line (pipe), plus;
3. Minor losses, "h".

Minor losses shall be calculated by the equation, $h = k * (V^2/2g)$ where the coefficient "k" is determined from Table G and "V" is the velocity of the exiting line determined by dividing the flow, Q, by the area, A, of the exiting line.

F. Other Requirements:

1. A minimum drop across the invert of inlets, manholes and junction boxes shall be required as follows:

For flow angle change equal to or less than 30°	0.1 ft.
For flow angle change greater than 30°	0.2 ft.
For three or more lines, all flow angles	0.3 ft.

2. The crown elevation(s) of pipe(s) entering a structure shall be at or above the crown of the pipe exiting the structure.
3. Maximum spacing of manholes for pipes less than 30 inches in diameter shall be 600 feet.

6.0 STREET CROSSINGS

6.1 General Requirements: The following requirements apply both to culverts and/or bridges on open channels and to enclosed system conduits which cross arterial streets (unless otherwise approved by the City Engineer):

A. Hydraulic Capacity: The hydraulic capacity of the culvert or conduit shall be the 4% AP peak discharge with 0.5 ft. minimum freeboard at the lowest point in the street gutter grade. The capacity of the culvert or conduit shall be increased as required to provide the 0.5-ft. minimum freeboard below the lowest point of entry to any existing upstream habitable structure.

B. Overflow: Overflow of the street is permitted at the 1% AP peak discharge with the depth of flow over the street not to exceed 0.6 ft.

6.2 Enclosed Systems: In addition to the same general requirements listed above, surcharge of the conduit is permitted.

7.0 ENERGY DISSIPATION

- 7.1 General Requirements:** Energy dissipation shall be required where enclosed systems or detention basin spillways discharge to open channels with design discharge outlet velocities greater than the following.

<u>System Discharge Velocity (fps)</u>	<u>Receiving Channel Lining Type</u>
4.0	Natural, unlined
5.0	Constructed, turf-lined
7.0	Reinforced vegetation
12.0	Riprap or gabions
15.0	Concrete
15.0	Natural limestone

7.2 Structure Types:

- A. Pipes and Pipe-Arches ($d \leq 24"$):** For pipes and pipe-arches less than 24 inches in diameter, either
1. Prefabricated end sections with cast-in-place toe walls, or
 2. Enclosed vertical drop structures in accordance with Figure 11.
- B. Enclosed System ($Q < 100$ CFS):** For enclosed system structures having a design discharge capacity less than 100 CFS, one of the following.
1. Enclosed vertical drop structures in accordance with Figure 11.
 2. Bureau of Reclamation Basin VI impact basin - Figure 12.
- C. Enclosed System ($100 \text{ CFS} \leq Q < 400 \text{ CFS}$):** For enclosed system structures having a design discharge greater than or equal to 100 CFS but less than 400 CFS, one of the following.
1. Bureau of Reclamation Basin VI impact basin - Figure 12.
 2. Bureau of Reclamation Basin IX baffled chute - Figure 13.
- D. Enclosed System ($Q \geq 400 \text{ CFS}$):** For enclosed system structures having a design discharge greater than or equal to 400 CFS,
1. Bureau of Reclamation Basin IX baffled chute - Figure 13.
 2. Bureau of Reclamation Basin III SAF basin - Figure 14.

7.3 Channel Lining:

- A. Lengths:** Channel lining shall be required for a distance of 50 feet downstream from all energy dissipating structures. Where enclosed system pipes or structures, which are part of the major system, discharge into a channel, either improved or natural, at an angle greater than 15 degrees from the axis of the channel, lining shall be required for a distance of 30 feet along the channel, centered on the structure outlet. The major system is defined for the purposes of this paragraph as all drainage facilities equivalent to or larger than a 36-inch diameter pipe.
- B. Materials:** Acceptable lining materials are riprap, gabions, concrete or in-situ limestone.

8.0 IMPROVED CHANNELS

8.1 Geometric Criteria:

A. Bottom Width: The minimum bottom width for improved channels shall be 4.0 feet.

B. Side Slopes: The maximum side slopes for trapezoidal channels shall be as follows:

1. 4 horizontal to 1 vertical for turf or reinforced vegetative lining and the overflow channel area above the lining materials.
2. 2 horizontal to 1 vertical for all other lining materials except vertical concrete or gabion walls.
3. Flatter if necessary for stability of slopes.

C. Alignment Changes: Horizontal alignment changes shall be achieved by circular curves only having a minimum radius of:

$$R = \frac{V^2 W}{8D}, \text{ where:}$$

R = Radius of channel centerline, in ft.

V = Velocity of 10% AP design flow, in feet per second

W = Channel width at 10% AP water surface elevation, in ft.

D = Depth of 10% AP design flow, in ft.

8.2 Lining Height:

A. Minimum Height: Channel lining material shall extend above the channel invert to the depth of the 10% AP design discharge plus 6 inches of freeboard. The invert of all constructed channels shall be lined with concrete, riprap or gabions to a minimum height of 6 inches above the invert.

B. Increase on Curves: Along the outer side of horizontal curves, the lining height shall be increased as follows:

$$y = \frac{D}{4}, \text{ where:}$$

y = Increased vertical height of lining, in feet.

D = Depth of 10% AP design flow, in feet.

Increased lining height shall be transitioned from "y" feet to zero feet over a minimum of:

1. 30(y) feet downstream from the point of tangency (P.T.) of the channel curve.
2. 10(y) feet upstream from the point of curvature (P.C.) of the channel curve.

8.3 Lining Material Requirements: The following types of lining materials are acceptable alternatives based on the peak flow velocity in the channel. Other types of lining materials not specifically listed may be used when approved by the City Engineer.

10% AP Peak

<u>Velocity (fps)</u>	<u>Permitted Lining Material</u>
> 12.0	Sound in-situ limestone Concrete Grouted riprap
>7.0 to 12.0	Sound in-situ limestone Concrete Grouted riprap Gabions Riprap
5.1 to 6.9	In-situ limestone Concrete Grouted riprap Gabions Riprap Reinforced turf above invert lining
5.0 and less	In-situ limestone Concrete Grouted riprap Gabions Riprap Reinforced turf above invert lining Turf above invert lining

8.4 Optional Design for Improved Channels: In lieu of sloping banks and linings as specified above, vertical walls may be constructed for improved channels conveying greater than 400 CFS at design discharge with the following requirements.

- A. Vertical Walls:** Shall be designed and constructed as retaining wall structures.
- B. Materials:** Acceptable materials for vertical walls are reinforced concrete or gabions.
- C. Wall Height:** The minimum wall height shall be the greater of 1.5 feet or the depth of the 1-year peak water surface plus 0.5 ft. The height shall be increased at transitions and bends.
- D. Fence:** Any vertical wall height 30" or greater shall be protected by 4 ft. high (or higher) chain link fencing installed along the wall lines on both sides of the channel.
- E. Access:** Adequate provisions shall be made for pedestrian entry/exit from the channel.

8.5 Subdrainage for Linings: All channel linings, except turf, shall provide for relieving back pressures and water entrapment beneath and/or behind the lining material.

- A. Materials:** The following are acceptable alternative methods for providing subdrainage.
 1. Nonwoven geotextile filter fabrics.
 2. Graded aggregate filter material with a minimum thickness of 4 inches and gradation based on filter design criteria.

B. Weep Holes: For concrete or riprap-lined channels, screened 4-inch diameter "weep holes" shall be required located at the base of the sloped sides, at a maximum spacing of 15 feet on-center.

8.6 Diversions: Proposed diversions of tributary areas greater than 0.5 acres may not have an adverse impact on downstream properties. Supporting computations for peak flow rates, channel capacities and water-surface elevations for both pre and post diversion conditions shall be submitted.

9.0 NATURAL CHANNELS

9.1 Maintenance: The developer and later the individual property owner(s) shall be responsible for maintenance of the entire area of the drainage easement to be dedicated or platted along all natural channels retained in the storm drainage system. This maintenance shall consist of removal of obstructions including debris and foreign objects; deadfall, drift and dead trees; trees on the banks with substantially undercut roots; and fences and other improvements. Trees to be removed shall be cut to within one foot of the ground line. Grubbing will not be required.

9.2 Bank Stabilization: Bank stabilization may be constructed along the entire channel length to minimize the easement width as specified in Section 3.2. Stabilization must be constructed where the required easements would otherwise extend off of the developer's property. The following requirements shall apply to the design of bank stabilization. (See Figure 15 for illustration of a typical installation.)

A. Vertical Walls: Vertical wall channels with lined inverts and gabion walls shall be provided. The criteria for improved vertical wall channels are applicable to this design except as modified in this section.

B. Channel Bends:

1. Bank stabilization shall be constructed with the convex (outside) side wall within the existing incised channel.
2. The channel shall be graded to the average clear width of the existing channel.
3. The minimum radius of the convex wall shall be as necessary to clear a 1.5:1 theoretical slope from the existing top of bank to the top of wall location.

C. Wall Height: The minimum wall height shall be the greater of 3.0 feet or the one-year peak discharge flow depth above the channel invert.

D. Grading: Grading shall be performed as required to 1) remove sloughage, if any, and to backfill to the top of the wall elevation on the convex, or high, bank side, and 2) to excavate the slopes above the top of wall to 2:1 or flatter on the concave, or low, side.

E. Slope Cover: Reinforced vegetative cover shall be planted on all graded slopes.

10.0 STORM WATER DETENTION

10.1 Other Regulatory Requirements: In addition to these criteria, the requirements of the Missouri Dam and Reservoir Safety Council shall apply to all detention dams greater than 35 feet in height. Such facilities shall be classified as Downstream environmental zone class I and designed per MDNR regulations.

10.2 Maximum Release Rates: The detention facility allowable release rate shall be calculated with the assumption that the site is an undeveloped condition. The engineer shall use an appropriate time of concentration and curve number to fit that assumption.

10.3 Storage Volume Requirements:

- A. General:** Detention storage for all facilities shall be established by hydrograph routing methods. The volume shall be as required to limit the release rates to the maximums indicated in 10.2.
- B. Additional Requirements:** All detention facilities shall provide additional storage volume (beyond required flood storage) below the elevation of the principal spillway for five years of sediment accumulation in accordance with Figure 16. In addition, all facilities designed as wet basins shall provide permanent storage volume as necessary to maintain a minimum water depth of 3.0 feet.

10.4 Hydrograph Routing Methods:

- A. General:** Hydrograph routing is required for each return period to determine maximum inflow, detention volume and release rates.
- B. Rainfall Distribution:** To compute the design inflow hydrograph, Huff's Quartile Rainfall Distributions (50% curves) shall be used for developing the hydrographs. Durations of 1-hour, 2-hours, 3-hours, 6-hours, 12-hours and 24-hours shall be evaluated to determine the critical duration design event.
- C. Runoff Computation:** Runoff shall be computed by the SCS curve number method. Applicable curve numbers shall be obtained from Table C. The curve number shall be weighted by proportional land use in the tributary area.
- D. Routing Interval:** The routing time (hydrograph ordinate) interval shall be appropriate for the method used with a maximum time interval of 5 minutes unless otherwise approved.
- E. Routing Method:** Detention routing shall be by the storage-indication, or Modified plus, method.
- F. Required Steps:** In designing a detention facility, the following steps are required:
 - 1. From proposed spillway characteristics, calculate rating curves of spillway stage vs. discharge.
 - 2. Calculate detention stage vs. storage volume from pond configuration and depth.
 - 3. Develop inflow hydrograph.
 - 4. Perform storage routing through the proposed detention facility.
- G. Simplified Design:** A simplified design method is acceptable only for detention facilities having a tributary area of 10.0 acres or less.
 - 1. The SCS TR-55 computer model may be utilized for computer methods.

2. By manual methods, use Figure 17 to determine required storage volume.

10.5 Principal Spillways (Outlets):

- A. General:** The principal spillway shall be designed to convey all discharge from the detention facility from the 1% AP and more frequent (inflow and discharge equal to or less than the 1% AP) storms and shall function without mechanical or electrical components.
- B. Hydraulic Characteristics:** The principal spillway shall have the hydraulic characteristics of a weir, pipe or orifice, or a combination of these. Pipes shall be a minimum of six inches in diameter except in parking lot and rooftop detention where the minimum size and configuration of opening shall be designed specifically for each condition.
- C. Capacity:** The spillway shall have sufficient capacity to discharge 80 percent of the detention storage volume within 24 hours after the peak inflow has entered the basin, excluding the water quality capture volume.
- D. Trash Racks:** Trash racks, screens, etc., shall be provided at the principal spillway as necessary to keep the facility fully operational.

10.6 Emergency/Overflow Spillways;

- A. Required Installations:** Emergency spillways shall be required for all detention facilities formed by earth embankments or dams greater than 10.0 feet in height.
- B. Return Period for Operation:** Emergency spillways shall operate only for storms less frequent (higher inflow and discharge) than the 1% AP storm.
- C. Regulatory Criteria:** The Missouri Dam and Reservoir Safety Council criteria shall apply to the design of emergency spillways with sufficient capacity to discharge the 0.5*6-hour PMP hydrograph without overtopping the dam.
- D. Exemptions:** Emergency spillways are not required for
 1. Excavated detention basins.
 2. Detention basins on structure roofs.
 3. Detention basins utilizing surface parking areas.

10.7 Other Requirements:

- A. Wet Basins:** The design of wet detention facilities shall include the following:
 1. Provisions for complete drainage to permit sediment removal and other periodic maintenance activities.
 2. The limits of maximum ponding shall be no closer than 30 feet horizontally and no less than two feet below the lowest sill elevation of any habitable building or structure.
 3. The entire area covered by fluctuating water levels shall be seeded, fertilized and mulched, sodded, or otherwise surfaces to protect against erosion.

- B. Dry Basins:** Dry detention facilities with storage on other than roofs or paved surfaces shall conform to the following:
1. The bottom shall be graded at a minimum of 2 percent to drain across grass. A minimum of 0.5 percent slope may be used if an interior trickle channel is installed. The trickle channel shall be 4.0 feet or greater in width.
 2. The limits of maximum ponding shall be no closer horizontally than 10 feet to a habitable building or structure unless waterproofing of the building and pedestrian access areas to the building are properly documented.
 3. Vertically, the limits of maximum ponding shall not be less than two feet below the lowest sill elevation of any adjacent building.
 4. The entire basin shall be seeded, fertilized and mulched, sodded or paved.
- C. Side Slopes:** Slopes on the banks, dams, dikes or berms around and forming the basin shall not be steeper than 3 horizontal to 1 vertical (3:1) for all excavation or embankment slopes. Flatter slopes shall be required if necessary for stability with a safety factor of 2.0 for dams greater than 10 feet in height, and 1.5 for all other slopes.
- D. Open Channels.** Normally-permitted open channels may be used as detention areas provided that:
1. The limits of maximum ponding conform to the requirements for both wet and dry basins.
 2. The maximum depth of detention does not exceed four feet.
 3. The minimum flow line grade is 0.5 percent.
 4. The maximum side slopes of the detention area are 3:1 in trapezoidal channel sections. For other channel sections, features shall be designed in consideration of safety, stability and ease of maintenance.
 5. The entire detention area is seeded, fertilized and mulched, sodded or paved.
 6. No ponding occurs within public rights-of-way without specific written approval of the City Engineer, and the hydraulic elevations resulting from channel detention do not adversely affect adjoining properties.
- E. Erosion Control:** Principal spillways and outlet works, as well as conveyance system entrances to detention basins, shall be equipped with energy dissipating devices as necessary to limit the peak discharge velocity in conformance with Section 7.0.
- F. Rooftop Detention:** Detention storage may be met in total or in part by detention on roofs. Details of such designs shall include the depth and volume of storage, details of outlet devices and downdrains, and elevations and details of overflow scuppers. Connections of roof drains to sanitary sewers are prohibited. Design loadings and special building and structural details shall be subject to approval by the City Engineer. Rooftop detention areas are exempt from sediment storage requirements.
- G. Parking Lot Detention:** Paved parking lots may be designed to provide temporary storage of storm water on a portion of their surfaces as follows:
1. Detention areas shall not be located in a primary parking lot which is defined as the most accessible 80 percent of the total parking for a facility.
 2. Depth of storage shall be limited to a maximum of 12 inches.
 3. The maximum limits of ponding are no closer horizontally than 10 feet to any building unless waterproofing of the structure and pedestrian access to the building are documented, and vertically not less than two feet below the lowest building sill elevation.

4. Retaining walls or curbs used to contain storm water in parking lots must be constructed of reinforced concrete.
5. Parking lot detention areas are exempt from sediment storage requirements.

10.8 Construction, Operation and Maintenance:

A. Easements: Access and permanent drainage easements shall be required as outlined in Section 3.

B. Public Facilities:

1. Public detention facilities shall be constructed by the developer where approved by the City and after plan approval and issuance of a permit. Dedication of easements to the City will be required.
2. Regional detention facilities may be dedicated as public facilities upon conceptual approval of the location and final approval of the design and construction by the City.
3. Operation and maintenance shall become the responsibility of the City after dedication of the easements and acceptance of the facility by the City.

C. Private Facilities:

1. Private detention facilities shall be constructed by the developer or property owner after plan approval and issuance of a permit by the City. Dedication of permanent drainage easements to the City will be required.
2. Operation and maintenance of private detention facilities shall be the responsibility of the property owner and successors.

D. Maintenance Activities: For both public and private drainage facilities, required maintenance activities include but are not limited to, debris removal and cleaning, cutting of vegetation that impairs the function of the structure or otherwise creates a public nuisance, repair of erosion, removal of silt, and maintenance of structural facilities including outlet works.

E. Construction Record Drawings: Construction record drawings showing as-built elevations and dimensions for detention structures are required. Both grading and outlet structure as-built data is to be submitted. Construction record drawings shall have field verified dimensions and elevations noted by revision clouds.

11.0 DRAINAGE PLAN REQUIREMENTS

- 11.1 General:** This section governs the preparation of drainage plans which shall include all information, including drawings, and calculations concerning a subdivision's internal storm water systems; the method of handling off-site drainage; and the discharge of runoff from the proposed subdivision. The drainage plan shall be prepared by a registered professional engineer in accordance with the requirements contained herein and shall be submitted to the City Engineer for review and approval.
- 11.2 Required Information:** The drainage plan shall conform to the following requirements and show the indicated information on the drawing(s).
- A. Scale:** The drainage plan shall be prepared at 1" = 100' or larger unless otherwise approved by the City Engineer.
 - B. Identification:** The drawing shall specify the subdivision, landowner, developer, engineer and date of submittal.
 - C. Contours:** A contour interval of 1 foot or 2 feet is acceptable. All existing topography shall also be included with the date of topo survey indicated.
 - D. Bench Marks:** At least one (1) bench mark adjacent to or within the proposed subdivision shall be shown on the drainage plan. Use Mean Sea Level (MSL) datum/National Geodetic Vertical Datum (NGVD).
 - E. Plat Layout:** The outline of all lots and blocks plus all drainage easements, dedications and reserves shall be shown. Lot dimensions, setback lines and utility easements are not required.
 - F. Storm Sewers:** All storm sewers shall be shown with the following data:
 - 1. Pipe size or diameter (inches).
 - 2. Inlet sizes - length and width (feet).
 - 3. Drainage basin and sub-basin boundaries.
 - 4. Q_{10} for each sub-basin/inlet.
 - G. Channels:** Improved channels shall be depicted on the drainage plan with the following data indicated.
 - 1. Channel slope.
 - 2. Bottom width (feet).
 - 3. Side slopes.
 - H. Detention Areas:** All detention areas as required by these regulations shall be shown on the drainage plan with the following data.
 - 1. Static pool elevation where applicable.
 - 2. Maximum water surface elevations for the 50%, 10% and 1% AP storms.
 - 3. Discharge rates for the 50%, 10% and 1% AP storms.
 - 4. Size and type of control structure.
 - I. FEMA Data:** The limits of the FEMA floodway and floodplain shall be shown along with the appropriate base flood elevations (BFE). Where new subdivisions are proposed adjacent to unstudied or nondetailed studied streams, the developer shall submit the appropriate backwater

(HEC-2) calculations, encroachment analysis, and floodway data to be submitted to FEMA for review and approval.

J. Minimum Pad Elevations: Minimum pad elevations shall be shown for each lot adjacent to natural streams, improved channels or detention areas.

K. Off-Site Drainage: All off-site drainage areas which discharge into the subject subdivision shall be labeled with the basin size, in acres, and the 50%, 10% and 1% AP runoff rates, or peak flows.

L. Street Grades: Preliminary street grades and elevations at sumps and crests shall be shown on the drainage plan using arrows to indicate direction of drainage flows.

M. Permits: Indicate on the drainage plan all permits required by local, state and federal agencies and the status of each one.

N. Drainage Calculations: All calculations supporting the drainage plan as required herein shall be submitted to the City Engineer for review and approval.

11.3 Document Format: The drainage plan shall be a complete, bound document containing all drawings and supporting calculations. Pockets shall be provided for drawings to allow easy removal. All data shall be organized in such a manner as to allow a systematic and timely review. A minimum of two (2) copies of the document shall be submitted to the City at the time of final plat application.

12.0 CONSTRUCTION PLAN REQUIREMENTS

12.1 Scope: This section governs the preparation of plans for storm water system projects.

12.2 General: The plans shall include all information necessary to build and check the design of storm drainage systems. The plans shall be arranged as required by the City Engineer. Standard details of the City may be included by reference. Plans shall be sealed by a registered professional engineer and shall be submitted to the City Engineer for review and approval.

12.3 Scale: Plans shall be drawn at the following minimum scales. Larger scales may be needed to clearly present the design. Bar scales shall be shown on each sheet for each scale.

Plan:	1-inch	=	50 feet
Profile			
Vertical:	1-inch	=	5 feet
Horizontal:	1-inch	=	50 feet
Drainage Area Map			
On site:	1-inch	=	200 feet
Off site:	1-inch	=	1,000 feet
Structural Plans:	1/4-inch	=	1 foot
Graphic Drawings:	Varies		
SWPPP Drawings:	Varies		

12.4 Required Information:

A. Drainage Area Map: A drainage area map shall included and shall indicate the following:

1. Ridge line of the area tributary to each principal element of the system.
2. The area in acres.
3. The runoff coefficient "C" or "CN" for each area.

B. Plan View: All designed storm drainage systems shall be drawn in plan view and shall contain the following:

1. North arrow and bar scale.
2. Ties to permanent reference points for each system located outside of the street right-of-way.
3. Identification and location of each pipe, culvert, inlet, structure and existing utility affecting construction.
4. Right-of-way, property, and easement lines, and the 1% AP flood-plain and setback from the top of bank of an open channel to any building.
5. Existing man-made and natural topographic features, such as buildings, fences, trees, channels, ponds, streams, etc., and all existing and proposed utilities.
6. Location of test borings.
7. Existing and finish grade contours at intervals of 2.0 feet or less indicating existing and finish grades and slopes.
8. A uniform set of symbols and abbreviations subject to approval by the City Engineer.
9. The centerline of open channels within 50 feet of an enclosed drainage system and showing the direction of flow.

C. Profile View: All designed storm drainage systems shall be drawn in profile view and shall contain the following:

1. Existing and finish surface grade along the centerline of pipe except street centerline may be used when construction includes street construction.
2. Length, size and slope of each line or channel segment. Slope shall be expressed in percent.
3. Headwater elevation at the inlet end of each culvert.
4. Flow line (invert elevation in and out) at each structure.
5. Each existing utility line crossing the alignment shall be properly located and identified as to type, size and material.
6. Test borings.
7. All station and invert elevations of manholes, junction boxes, inlets or other structures.
8. The profile shall show existing grade above the centerline as a dashed line and proposed finish grades or established street grades by solid lines. It shall also show the flow line of any drainage channel, either improved or unimproved, within 50 feet on either side of the centerline. Each line shall be properly identified. The proposed storm sewer shall be shown as double solid lines properly showing the top of the pipe.
9. All manholes, inlets or other structures shall be shown and labeled with appropriate "Standard Drawing" designation, if applicable.

D. Design Information for Each Part of the System: The plans shall present design information for each culvert, structure, facility, pipe and channel segment and shall contain the following:

1. Tributary area in acres.
2. Design discharge and capacity in cubic feet per second.
3. Runoff coefficient "C", design storm return frequency, rainfall intensity and Manning's "n" value.
4. Discharge velocity at design flow.
5. Hydraulic grade line.
6. Type and grade of material (gage, class, etc.).

Schedules which indicate all variable dimensions and elevations covered by standards or "typical" drawings shall be shown on the plans. All design details for nonstandard structures shall be indicated on the plans. A minimum of one plan view and one sectional view shall be shown on the plans for each type of structure. Additional views may be required if necessary to clearly define the design. A reinforcing bar list is not required; however, the grade, type, size and location of the bars shall be clearly indicated on the plans.

E. Stormwater Pollution Prevention Plan (SWPPP): The SWPPP shall present information for each erosion and sediment control structure, construction entrance location and dimensions, construction sequence, seeding specifications and BMP details.

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13.0 WATER QUALITY PROTECTION

- 13.1 Introduction: This section covers the design of Best Management Practices (BMPs) to minimize the adverse effects of urban stormwater runoff on the quality of receiving waters.

It is recognized that specific water quality standards, other than those contained in the Missouri Clean Water Laws, have not been developed or adopted for these receiving waters. The objective of this policy is not to meet specific reductions of targeted pollutants, but rather to provide a generally effective level of pollutant removal by using reasonable, cost effective measures. The goal is to minimize, to the maximum extent practical, adverse impacts on the quality of the receiving waters.

It is important to recognize that the *structural Best Management Practices* (BMPs) for which design guidance is given in this section represent only one aspect of stormwater quality management. The most effective means of managing stormwater quality lie in overall watershed planning and zoning controls, and other *nonstructural* practices which are generally beyond the control of an individual development.

Data from communities across the country has shown that, as the total impervious area in a watershed exceeds ten to fifteen percent (10-15%), water quality declines unless mitigative measures are taken. The most important management tool is to limit the impervious area in these watersheds to these values. While these limits may be attainable for the watershed as a whole, they may not be possible for individual development or sub-basins. Structural BMP's will be required for these developments.

13.2 GENERAL DESIGN GUIDELINES

- a. Minimize the amount of runoff. The total quantity of pollutants transported to receiving waters can be minimized most effectively by minimizing the amount of runoff. Both the quantity of runoff and the amount of pollutant wash-off can be minimized by reducing the amount of *directly connected impervious area (DCIA)*. Impervious areas are considered connected when runoff travels directly from roofs, drives, pavement, and other impervious areas to street gutters, closed storm drains or concrete, or other impervious lined channels. Impervious areas are considered disconnected when runoff passes as sheet flow over grass areas, or through properly designed BMP's, prior to discharge from the site.
- b. Maximize contact with grass and soil. The opportunity for pollutants to settle out is maximized by providing maximum contact with grass and soil. Directing runoff over vegetative filter strips and grass swales enhances settling of pollutants as the velocity of flow is reduced. Infiltration of runoff into the soil is also increased.
- c. Maximize holding and settling time. According to ASCE ([Reference 13.1](#)), the most effective runoff quality controls reduce the runoff peak and volume. The next most effective controls reduce peak runoff rates only. For small storms the runoff rate should not exceed the pre-project peak flow rate from the fifty percent (50%) AP (2-year) storm. Most obnoxious pollutants (exceptions include water soluble nutrients and metals) can be settled out. By reducing the rate of outflow and increasing the time of detention storage, settling of pollutants and infiltration of

- runoff is maximized.
- d. Design for small, frequent storms. Drainage systems for *flood control* are designed for large, infrequent storm events. In contrast, stormwater quality controls must be designed for small, frequent storm events. In the Neosho area, eightysix percent (86%) of all twenty-four (24) hour rainfalls are one inch (1") or less (see [Figure 5](#)). Most pollutants are washed off in the "first flush", generally considered the first one-half inch ($\frac{1}{2}$ ") of runoff.
 - e. Utilize BMP's in series where possible. Performance monitoring of BMP's in Florida, Maryland, and Delaware has shown that the combined effect of providing several BMP's in a series can be much more effective in reducing the level of pollutants than providing a single BMP at the point of discharge. To the greatest extent practical, runoff should be directed first to vegetative filter strips, then to grass swales or channels, and then to extended detention basins, sand filters, etc.
 - f. Incorporate both flood control and water quality objectives in designs, where practical. Incorporating both flood control and water quality criteria into a single stormwater management facility is not only possible, but is encouraged. Whenever practical, combining several objectives, such as water quality enhancement and flood control, maximizes the cost- effectiveness of stormwater management facilities.

13.3 REQUIREMENTS

The following requirements will apply to all development.

- a. Stormwater runoff from any new development for which the total impervious area exceeds ten percent (10%) of the total land area of the development, must be directed through an extended wet or dry detention basin, or other properly designed BMP, prior to discharge from the site.
- b. Runoff from fueling areas and other areas having a high concentration of pollutants will be required to be directed to a sand filter or other properly designed BMP which provides filtration as well as settling.
- c. The required volume for capture and treatment shall be designed as the *water quality capture volume* (WQCV), and shall be determined as set forth in [Section 13.4.1](#).
- d. Detention storage must be provided to limit the peak flow rate from the fifty percent (50%) AP (2-year) storm to pre-project values. Detention facilities for peak flow control shall be designed as set forth in [Section 10.0](#).

13.4 DESIGN CRITERIA

13.4.a Water Quality Capture Volume

Water quality BMPs shall be designed to capture the runoff from the 86th percentile rainfall for the Neosho area as well as to capture the first flush of pollutants from directly connected impervious areas within the proposed development.

The required water quality capture volume (WQCV) to be used in design of extended wet and dry detention basins and other BMPs whose design is based upon capture and treatment of storm

water, shall be the greater of the following:

- 1) the first one-half inch ($\frac{1}{2}$ ") of runoff from the directly connected impervious area (DCIA) in the development, or
- 2) the *runoff* resulting from total rainfall depth of one inch (1") in twenty-four (24) hours over the entire development.

13.4.b Directly Connected Impervious Area

Impervious areas are considered connected when runoff travels directly from roofs, drives, pavement, and other impervious areas to street gutters, closed storm drains or concrete, or other impervious lined channels. Connected and disconnected impervious areas are illustrated in [Figure 33](#).

In order for an impervious area to be considered disconnected, runoff from the area must pass through a vegetative filter strip or other BMP meeting the requirements set forth in this section.

For determining the amount of impervious area, the following assumptions shall apply in the absence of more detailed data:

Single Family Lots

Average roof area:	2500 square feet
Average drive area:	800 square feet
Average impervious area per lot:	3500 square feet

If gutter downspouts are directed to drain toward lawn areas, seventy-five percent (75%) of the roof area shall be considered disconnected.

Duplexes and Patio Homes

Average roof area:	2500 square feet
Average drive area:	1600 square feet
Average impervious area per lot:	4500 square feet

If gutter downspouts are directed to drain toward lawn areas, seventy-five percent (75%) of the roof area shall be considered disconnected.

Multi-Family, Commercial and Other Areas

The amount of impervious area contained in multi-family, commercial, office and manufacturing developments shall be determined based upon the site plan for the development.

13.4.c Vegetative Filter Strips

Vegetative filter strips consist either of areas of undisturbed vegetation in good condition, including trees, grass, sod or other vegetative cover which meets the objectives for this BMP, or areas where new vegetation has been established. Vegetative filter strips shall be provided in areas of sheet flow only. The hydraulic loading for filter strips shall not exceed 0.05 cfs per lineal foot of filter strip length for the fifty percent (50%) AP (2-year) storm (equal to the runoff per unit width from a four hundred feet (400') length of impervious area).

The minimum width of the filter strip shall not be less than twenty percent (20%) of the length of the sheet flow from the upstream impervious surface, and in no case shall be less than six feet (6'). The slope along the width of the filter strip shall not exceed 4:1 (25%).

Typical details for vegetative filter strips are shown in Figure 34.

13.4.d Grass Swales

Grass swales may be provided to convey runoff from vegetative filter strips and impervious areas to BMP's designed for capture and temporary storage of runoff. Design criteria for grass swales shall be as follows:

Maximum side slopes: 4:1.

Maximum longitudinal slope: 5%.

Minimum longitudinal slope: 1%.

Maximum velocity: 2 feet per second for peak flow from the 50% AP (2-year) storm.

Grass swales shall be lined with sod or seeded and covered with suitable erosion control blanket and mulch.

Typical details for grass swales are shown in Figure 35.

13.4.e Extended Dry Detention Basins

Extended dry detention basins may be provided to capture and provide temporary storage for the required water quality capture volume. Extended dry detention basins shall be placed outside of the primary watercourses which allow off-site flows to pass through the development (i.e., "off-line") where possible.

Design criteria for extended dry detention basins shall be as follows:

Volume: Minimum volume shall be one hundred and twenty-five percent (125%) of the required water quality capture volume (WQCV). Detention basins for water quality may be combined with detention basins for flood control. Effects of the WQCV may be considered in the design for flood

control.

Drain time: The WQCV shall be released over a minimum period of twenty four (24) hours and a maximum period of seventy-two (72) hours.

Outlet structure: Outlet structures shall consist of a perforated riser pipe, outlet pipe and gravel filter material as shown in Figures 36 and 37. The minimum allowable riser pipe diameter is eight inches (8"). The riser pipe shall be connected to an outlet pipe of equal or greater diameter. The outlet pipe shall have adequate capacity to carry the maximum rate of flow from the riser pipe. Material for the riser pipe shall be Schedule 40 PVC, ductile iron, or corrugated, galvanized metal.

A removable cap shall be provided at the top of the riser pipe. The cap shall have a one inch (1") diameter hole for air relief.

The outlet pipe shall be bedded in firmly compacted clay, free of stones. For dams exceeding ten feet (10') in height, an anti-seep collar shall be provided around the pipe.

Number of rows of perforations, number of perforations per row and diameter of perforations for the riser pipe shall be specified on the plans. Perforation pattern shall be determined based upon orifice calculations to provide for release of the WQCV over the specified time. Perforations shall meet the following requirements:

Minimum perforation diameter:	1/4 inch
Maximum perforation diameter:	1 inch
Minimum number of holes per row:	4
Maximum number of holes per row:	8
Minimum row spacing:	4 inches
Maximum row spacing:	12 inches

Freeboard: Where the basin is to be utilized as a water quality BMP only, twelve inches (12") minimum freeboard shall be provided above the WQCV.

Forebay: It is preferred that a forebay be provided to dissipate energy from incoming flows and to trap settleable sediment entering the basin. The forebay should be separated from the remainder of the basin by an earth dike meeting the requirements of Section 10. The top of the dike shall be set six inches (6") above the stage of the WQCV. Outflow from the forebay to the basin shall be through a gravel filter meeting the requirements of Section 14.5.2 (Figure 24). The top of the gravel filter shall be set equal to the stage of the WQCV.

The volume of the forebay shall be a minimum of ten percent (10%) and a maximum of twenty percent (20%) of the WQCV. The volume of the forebay is considered to be part of the required WQCV, not additional volume.

General construction requirements: The optimal length to width ratio for a water quality detention basin is four (4). The length to width ratio should be no less than two (2). The minimum allowable length to width ratio is one (1). Side slopes, dams or dikes, and retaining walls shall meet the

requirements of [Section 10](#).

Overflow spillways: Where the basin is to be utilized as a water quality BMP only, a spillway or outlet structure meeting the requirements of [Section 10](#) and capable of passing the peak flow from a 1% AP (100-year) storm for the drainage area upstream of the basin, shall be provided. The lowest point on the spillway or outlet structure shall be set at the top of the WCQV.

Trickle channels: Trickle channels shall be provided to provide grade control and to minimize chronic wet areas. Trickle channels shall be constructed of six inch (6") stone or other porous medium. A typical trickle channel cross section is shown in [Figure 37](#).

A typical plan and section for extended dry detention basins are shown in [Figure 38](#).

13.4.f Extended Wet Detention Basins

Extended wet detention basins may be provided to capture and provide temporary storage for the required water quality capture volume. Extended wet detention basins shall be placed outside of the primary watercourses which allow off-site flows to pass through the development (i.e., "off-line") where possible.

Design criteria for extended wet detention basins shall be the same as for extended dry detention basins, with the following exceptions:

The volume of the permanent pool should not be less than 1.0 to 1.5 times the WQCV.

A bench area (littoral zone) with a width of ten feet (10') shall be provided as shown in [Figure 13.8](#). It is preferred that emergent aquatic vegetation be provided in this zone.

It is recommended that a minimum of twenty-five percent (25%) of the WQCV be provided in the upper eighteen inches (18") of depth. A maximum of fifty percent (50%) of the permanent pool volume shall be provided in the upper eighteen inches (18") of depth.

Depth of the principal portion of the permanent pool shall be a minimum of four feet (4').

It is preferred that a forebay meeting the same requirements as specified for dry detention basins, be provided.

Where perforated riser pipes are not encased in gravel, only corrugated metal or ductile iron pipe may be used.

Typical details for extended wet detention basins are shown in [Figure 39](#).

13.4.g Sand Filters

Runoff from fueling plazas, vehicle maintenance areas, solid waste storage or transfer areas, and other areas having potentially high concentrations of contaminants shall be passed through a sand filter prior to discharge to receiving waters.

Total impervious area draining to a sand filter will generally be one (1) acre or less. Sand filters shall be provided with a sedimentation chamber and a filtration chamber. Design of sand filters shall be based upon the Austin, Texas first flush filtration basin (full sedimentation design) as described in Debo and Reese pp. 596-598 ([Reference 13.2](#)). A schematic cross section of a sand filter is shown in [Figure 40](#).

13.4.h Other Structural BMPs

Constructed wetlands, porous pavements and other structural BMPs for which detailed design criteria can be documented in generally accepted literature can be provided in addition to, or in lieu of, the BMPs described above, provided the objectives of this section can be met. The use of infiltration basins and trenches is discouraged due to possible adverse impacts on groundwater.

13.5 OPERATION AND MAINTENANCE

The City of Neosho provides no maintenance of water quality BMPs located on private property. Maintenance must be provided by the owner of the property upon which the BMP is located. Maintenance includes, but is not limited to, removal of debris, control of vegetation, removal of accumulated sediment when the WQCV volume has been reduced by 25% or more.

Extended detention basins and wetlands or other “capture and storage” BMPs shall be located within a single lot or property, within a designated drainage easement. Where BMPs are located in common areas or adjoining off-site areas, the property upon which the BMP is located shall remain in the ownership of the developer or property owners’ association.

Where a property owners’ association is formed, restrictive covenants which provide for collection of fees for maintenance of the BMPs shall be filed in the office of the Jasper or Newton County Recorder of Deeds, as appropriate. Restrictive covenants must be approved by the County legal counselor prior to filing of the final plat.

13.6 REFERENCES

1. American Society of Civil Engineers, Manuals and Reports of Engineering Practice No. 77 (WEF Manual of Practice FD-20), Design & Construction of Urban Stormwater Management Systems, Chapter 12. American Society of Civil Engineers, New York, NY, 1992.
2. Debo, T.N. and Reese, A.J., Municipal Stormwater Management, Chapter 13, Lewis Publishers, Boca Raton, FL, 1995.

SECTION 14 - EROSION & SEDIMENT CONTROL

14.1 Introduction: The purpose of this section is to provide detailed design criteria and standards for the design of erosion and sediment control measures as required by the City of Carl Junction's National Pollutant Discharge Elimination System permit.

14.2 GENERAL GUIDELINES

The goal of the regulation is to effectively minimize erosion and discharge of sediment from construction sites by application of relatively simple and cost effective Best Management Practices (BMPs). General guidelines for erosion and sediment control are listed below. Sediment and erosion control plans must demonstrate consistency with these guidelines.

- ▶ Minimize the area disturbed by construction at any given time.
- ▶ Stabilize disturbed areas as soon as possible by re-establishing sod, other forms of landscaping, and completing proposed structures, pavements, and permanent storm drainage systems.
- ▶ Provide for containment of sediment until areas are stabilized.
- ▶ Provide permanent erosion control by constructing and maintaining the permanent storm drainage system and maintaining vegetative cover, pavements, and other surface coverings in good condition.
- ▶ Avoid environmentally sensitive areas. Streams, springs, sinkholes, lakes, or wetlands are easily affected by sediment from construction sites. Careful planning and additional controls are needed when construction site are located in, or in close proximity, to these areas.
- ▶ Recognize sheet flow vs. concentrated flow. In areas where runoff occurs primarily as sheet flow, containment of sediment is relatively simple. In these areas, straw or hay bales, silt fences, and vegetative filter areas can be very effective. Where flow is concentrated, containment of sediment becomes more difficult as the rate and volume of flow increase. In these areas, more elaborate controls such as sedimentation basins must be provided.
- ▶ Recognize temporary vs. permanent controls. The greatest potential for soil erosion occurs during construction. Temporary controls are those which are provided for the purpose of controlling erosion and containing sediment until construction is complete. Temporary controls include straw or hay bale dikes, silt fences, erosion control blankets, etc., which are not needed after the area is stabilized. Permanent controls consist of vegetative cover, riprap, concrete trickle channels, detention basins, etc., which will

remain in place through the life of the development. It is possible for the same feature to serve both a temporary and permanent purpose. The difference between temporary and permanent erosion control should be clearly recognized in preparing an erosion and sediment control plan.

14.3 SITE DEVELOPMENT PERMITS

14.3.a Site Development Permit Requirements.

A Site Development Permit must be obtained before any land is graded for non-agricultural purposes.

Grading is defined as any excavation or filling or combination thereof. Grading of agricultural land is considered non-agricultural whenever soil is excavated for sale off the site or soil from other properties is brought onto the site.

The Public Works Department may waive the requirement for a Site Development Permit in the following cases:

1. Sites where one (1) acre or less is graded, provided the graded area is located a distance of twenty-five feet (25') or more from a spring, sinkhole, cave, wetland, watercourse, or floodplain, and where the proposed construction does not include the construction of stormwater detention basins or other drainage facilities.

NOTE: Lots in new subdivisions will be considered part of the entire subdivision site area.

2. The following activities, provided they are not located within twenty-five feet (25') of a spring, sinkhole, cave, wetland, or watercourse:

- a. Grading for single family residences.

NOTE: Lot grading done as a part of an overall subdivision plan in order to make lots buildable or prepare lots for sale is not exempt.

- b. Grading and repair of existing roads or driveways.
- c. Cleaning and routine maintenance of roadside ditches or utilities.
- d. Utility construction where the width of the disturbed area for trench excavation and backfill is twenty feet (20') or less.

3. Emergency construction required to repair or replace roads, utilities, or other items affecting the general safety and well being of the public.

For emergency construction sites which would otherwise be required to obtain a permit and for which remedial construction will take more than fourteen (14) calendar days, application for the permit must be made within three (3) calendar days from the start of construction.

14.3.b Permit Procedure

The following items must be submitted prior to issuance of a Site Development Permit:

- b.1. Completed site development permit application signed by the property owner or his legally authorized agent. Each application shall bear the name(s) and address(es) of the owner or developer of the site and of any consulting firm retained by the applicant together with the name of the applicant's principal contact at such firm and shall be accompanied by a permit filing fee.
- b.2. Each application shall include a statement that any land clearing, construction, or development involving the movement of earth shall be in accordance with the Erosion and Sediment Control Plan and that a certified contractor shall be on site on all days when construction or grading activity takes place.
- b.3. Site Development permit fee. Checks must be made payable to Neosho City Clerk.
- b.4. An approved sediment and erosion control plan (SECP).
- b.5. Performance bond or other required security.
- b.6. For sites where one (1) acre or more of land are disturbed the following additional items are required:
 - a. A copy of the Missouri State Operating Permit.
 - b. An approved Stormwater Pollution Prevention Plan (SWPPP).
- b.7. Other State or Federal permits, if required (see Section 14.4).

The submittal and approval procedure is as follows:

1. Subdivisions

A sediment and erosion control plan (SECP) shall be submitted for review along with the plans for the subdivision improvements.

Site development permits for subdivisions can be issued after approval of the plans for the subdivision improvements by the Public Works Director, and the items listed above are received.

2. Buildings

Two (2) copies of the sediment and erosion control plan (SECP) shall be submitted to the Public Works Department along with the building plans.

Site development permits can be issued after approval of the SECP and storm drainage plans by the Public Works Director and the items listed above are received.

For sites served by septic systems or other individual on-site wastewater systems, the wastewater systems plans must also be approved prior to issuance of the site development permit.

3. Other Sites

Other sites include borrow and spoil areas, gravel mining areas, and any other sites where a subdivision plat or a building permit is not required.

Two (2) copies of the sediment and erosion control plan (SECP) shall be submitted to the Public Works Director for review.

A site development permit can be issued after approval of the SECP by the Public Works Director and the items listed above are received.

14.3.c Sediment & Erosion Control Plan (SECP)

1. Professional Qualifications

Sediment and Erosion Control plans must be prepared by and bear the seal of an engineer, land surveyor, architect, landscape architect, or geologist registered to practice in the State of Missouri or by a Certified Professional in Erosion and Sediment Control (CPESC) who has attained certification by the Soil & Water Conservation Society. When the total area of the site exceeds one (1) acre, or the drainage area of any watershed for which an element of the plan must be designed exceeds one (1) acre, the plan must be prepared under the supervision of an engineer registered in Missouri.

2. Plan Requirements

The sediment & erosion control plan must be drawn to scale and must include the following items:

- 1) Location map at a scale of 1" = 2000'.
- 2) Legal description of property.
- 3) North arrow and scale.
- 4) One-Call utility notification symbol.
- 5) Title block.
- 6) Signature block for Public Works Director.
- 7) Design professional's seal.
- 8) Existing topographic contours at five feet (5') maximum intervals.

NOTE: Contours cannot be interpolated from U.S.G.S. maps. Each fifth (5th) contour (index contour) shall be labeled and shown in heavier line weight. Index contours must be labeled in a sufficient number of locations to allow the plan to be followed. Labels for existing and finish grade contours shall be distinguished by use of different symbols or fonts.

- 9) Proposed grades.
- 10) Existing and proposed utilities.
- 11) Existing ground covering (open areas, tree masses, etc.).
- 12) Existing buildings, drives and pavements.
- 13) Proposed buildings or other structures, drives, and pavements.
- 14) Limits of area to be disturbed (shading preferred).

- 15) A natural resources map identifying soils, forest cover, and resources. This map should be at a scale no smaller than 1"=100'
- 16) All erosion and sediment control measures necessary to meet the objectives of this local regulation throughout all phases of construction and after completion of development of the site. Depending upon the complexity of the project, the drafting of intermediate plans may be required at the close of each season.
- 17) A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
- 18) Details of non-standard erosion and sediment controls.
- 19) Seeding & mulching requirements including seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type of line and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures.
- 20) Total site area, total disturbed area.
- 21) Location of stockpile areas, staging areas, etc.
- 22) Location of temporary construction entrance(s).
- 23) Provisions for maintenance of control facilities, including easements and estimates of the cost of maintenance.

14.3.d Bond Requirements

1. Subdivisions

A security agreement or other form of security acceptable to the City in the amount of the value of the required sediment and erosion controls, including the storm drainage system, must be received prior to issuance of the site development permit.

2. Buildings

If the site development permit is issued prior to the building permit, the only type of bond accepted will be a cash bond. After issuance of the building permit, the cash bond can be converted to an escrow, security agreement, or other form of bond allowed in the Zoning Regulations.

3. Other Sites

Only cash bonds will be accepted for sites where a subdivision plat or building permit is not required. A cash bond is obtained by submitting the required bond amount to the Neosho City Clerk's office in the form of cash, cashier's check or money order, and obtaining a receipt.

4. Amount of Security

The amount of security will be one thousand dollars (\$1,000.00) per graded acre for seeding and mulching, plus the estimated construction cost for permanent sediment and erosion control measures specified on the SECP. This includes all elements of the storm drainage system.

5. Release of Bond

Bond will be released one (1) year after seeding and mulching is complete, provided vegetation is firmly established. If vegetation is not firmly established at this time, the bond will be forfeited and the work will be completed under the direction of the City.

Bonds may be released sooner if vegetation is firmly established. Vegetation will be considered firmly established when it has survived from the permanent seeding season in which it is placed to the next permanent seeding season and growth has been established on all eroded areas which have been noted for repair.

14.4 OTHER PERMITS

14.4.a NPDES Stormwater Permit

When the area of land disturbance is one (1) acre or more, an application for a stormwater discharge permit must be submitted to the Missouri Department of Natural Resources. Permit requirements are set forth in 10 CSR 20-6.200 of the Missouri Clean Water Laws.

For sites requiring a State permit, the following procedure applies:

1. The sediment and erosion control plan is submitted to the Public Works Director.
2. If the plan is in substantial compliance with City requirements, the Public Works Director will issue a letter of "Conditional Approval of Stormwater Management Plan". The conditions of approval are the items noted by the Public Works Director in the letter as being deficient on the first submittal.
3. The applicant submits MDNR forms E and G, the MDNR fee (with check made payable to "Director of Revenue"), and the Neosho Public Works Director's letter of conditional approval to MDNR.
4. MDNR reviews the application.
5. A City permit can be issued upon receipt of a copy of the State permit. Construction can commence only after issuance of the City site development permit.

City Projects

City-funded projects are covered under general permit MO-R1000. Separate applications are not required for each project.

14.4.b "404" Permit

Grading activities in streams or wetlands may require a Department of the Army Permit under Section 404 of the Clean Water Act. It is the obligation of the property owner or operator to contact the Corps of Engineers to determine whether a permit is required whenever working in these areas. A copy of the Corps of Engineers written determination, where applicable, shall be provided prior to issuance of the site development permit.

14.4.c Floodplain Development Permit

A Floodplain Development Permit must be obtained from the Department of Public Works for development within Special Flood Hazard Areas designated on the Flood Insurance Rate Maps for Neosho, Missouri.

14.4.d Industrial Mineral Mines Permit

Sand and gravel excavation, quarries, and gravel mines must obtain a permit from the Missouri Department of Natural Resources, Land Reclamation Division. Contact the Division of Land Reclamation at P.O. Box 176, Jefferson City, MO 65102 for information concerning these permits.

14.5 DESIGN STANDARDS & CRITERIA

14.5.a Grading

Clearing and grading of natural resources, such as forest and wetlands, shall not be permitted except when in compliance with the design criteria. Clearing techniques that retain natural vegetation and drainage patterns shall be used to the maximum extent practicable. Clearing, except that necessary to establish erosion and sediment control devices, shall not begin until all sediment control devices have been installed and have been stabilized.

1. Maximum grades

Cut or fill slopes shall not exceed three (3) horizontal to one (1) vertical (3:1), except as approved by the City of Neosho to meet other community or environmental objectives.

2. Maximum height

Cut or fill slopes shall not exceed fifteen feet (15') feet in vertical height unless a horizontal bench area at least five feet (5') in width is provided for each fifteen feet (15') in vertical height.

3. Minimum slope

Slope in grassed areas shall not be less than one percent (1%).

4. Construction Specifications

Construction of private and public streets must comply with specifications set forth by the Neosho Public Works Department. For all other areas, construction specifications stating requirements for stripping, materials, subgrade compaction, placement of fills, moisture and density control, preparation, and maintenance of subgrade must be included or referenced on the plans or accompanying specifications.

5. Spoil Areas

Broken concrete, asphalt, and other spoil materials may not be buried in fills within proposed building or pavement areas.

Outside of proposed building and pavement areas, broken concrete, asphalt or stone may be buried in fills, provided it is covered by a minimum of two feet (2') of earth.

Burying of other materials in fills is prohibited.

6. Stockpile Areas

Location of proposed stockpile areas shall be outlined on the plans and specifications for proper drainage included.

7. Borrow Areas

The proposed limits of temporary borrow areas shall be outlined in the plans and a proposed operating plan described on the SECP.

At the time borrow operations are completed, the area shall be graded in accordance with the criteria set forth above and vegetation re-established.

14.5.b Sediment Control

1. Existing Vegetative Filter Area

Existing vegetative filter areas may be used where:

- a) unconcentrated sheet flow occurs,
- b) an area of existing vegetation a minimum of twenty-five feet (25') in width can be maintained between the area to be graded and a property line, watercourse, sinkhole, spring, wetland, or waterbody,
- c) existing ground slope is no greater than five to one (5:1) or twenty percent (20%),
- d) the existing vegetative growth is of sufficient density and in sufficiently good condition to provide for filtration of sediment.

The minimum width of the vegetative filter area shall be twenty percent (20%) of the width of the tributary area. Vegetative filter areas can be used as both a temporary and permanent practice.

2. Straw bale dike or silt fence

Containment areas constructed of hay or straw bales or silt fence may be provided in areas where:

- 1) unconcentrated sheet flow occurs.
- 2) an area of existing vegetation a minimum of twenty-five feet (25') in width cannot be maintained

between the area to be graded and a property line, watercourse, sinkhole, spring, wetland, or classified lake.

3) the maximum width of cleared area upslope of the bale dike or silt fence is as set forth below:

Slope of cleared area (%)	Maximum width upslope of dike/silt fence (feet)
2 to 5	100
5 to 20	50
> 20	25

Either cereal grain straw or hay may be used for bale dikes. Straw bale dikes shall be constructed as shown in [Figure 17](#).

Silt fence may be used in lieu of hay or straw bales. Silt fence shall be constructed as shown in [Figure 18](#).

Straw bale dikes must be installed level, that is, "along the contour", in order to avoid creating points of concentrated overflow. Straw/hay bale dikes and silt fences must be periodically inspected and replaced as necessary if deteriorated.

Hay bale dikes and silt fences are temporary practices.

3. Temporary Containment Berm

Temporary containment berms may be used in lieu of straw bale dikes or silt fence, under the same conditions set forth above. An overflow area six inches (6") below the top of the berm and five feet (5') in length or an approved alternative must be provided for each two hundred feet (200') of berm length. The overflow area shall be lined with six (6) mil or thicker polyethylene plastic, six (6) ounces or heavier non-woven filter fabric, or other approved lining. Plastic and fabric liners shall be held in place by covering the perimeter with earth or weighting down with large rock or sandbags.

Containment berms and swales must be installed level, "along the contour".

Accumulated sediment must be removed when it reaches one-third (1/3) of the berm height.

Temporary containment berms and accumulated sediment must be completely removed after the tributary area is stabilized.

Temporary containment berms shall be constructed as shown in [Figure 19](#).

4. Inlet Protection

This practice consists of protecting the inlet perimeter or opening with straw bales, silt fence or sandbags. The purpose of this practice is to keep sediment from collecting in storm drains. This practice is also useful when site conditions prevent locating a sediment basin downstream of the storm sewer outfall.

NOTE: Inlet protection described in this paragraph cannot be used where blockage of the inlet opening would result in flooding of residential dwellings, buildings, streets or roads, or off-site property.

a. Curb Inlets

Curb inlets can be protected from sediment entry by placing sand bags over the inlet opening. Sand bags must be replaced when deteriorated and removed when the area has been stabilized. Curb inlet protection is shown in [Figure 20](#).

Accumulated sediment must be removed from the street after each rainfall.

b. [Area Inlets](#)

In paved areas, area inlets can be protected by placing gravel filled sandbags up to two (2) courses high around the perimeter of the inlet.

Outside of paved areas or before pavement is placed, area inlets can be protected by installing a silt fence or straw bale dike around the inlet perimeter.

Type DI-1 inlets can be protected by placing sandbags over the openings.

Accumulated sediment must be removed prior to final approval.

Area inlet protection is shown in [Figure 21](#).

5. [Diversion](#)

Where flow must be diverted into sediment basins or other sediment retaining facilities, diversion berms or swales or other approved means of diverting runoff may be specified.

Where sediment enters a street which is up-grade from an existing street, means must be provided to divert runoff to a sediment basin before discharge from the site. The method of diversion will vary depending upon the phase of construction. After initial grading, an earth berm can be used. This is no longer possible after the street subgrade is completed and curbs are installed. After the street pavement is completed, sand bags can be used to divert the runoff into inlets for discharge into the sediment basin. Diversion of street runoff is shown in [Figures 22 and 23](#).

6. [Gravel Filter Dam](#)

Where concentrated flow occurs and less than two (2) acres of tributary drainage area are graded (i.e. a sediment basin is not required) or where construction of a sediment basin is not feasible, a gravel filter dam shall be provided prior to discharge of runoff from the property.

Gravel filter dams consist of a layer of filter fabric and crushed rock covering the upstream side of a riprap dike. Riprap shall be six and twelve inches (6"and12") in size. Filter fabric may be woven or non-woven, Mirafi 500X, Mirafi 150NL, or equal. The purpose of the filter fabric is to remove sediment particles as water flows through it. The layer of crushed rock provides additional filtration protects the filter fabric, and holds it in place.

Where gravel filter dams are used as sediment basin outlets, one (1) square foot of filter fabric area shall be provided for each one thousand (1,000) cubic feet of storage. The minimum area provided shall be four (4) square feet.

Where gravel filter dams are used as ditch checks in channels, the gravel filter area shall extend

throughout the width of the dam.

Riprap stilling basins shall be provided downstream of the filter dam where discharge is to a grass channel.

Gravel filter dam details are shown in Figures 24 and 25.

7. Sediment Basin

Sediment basins shall be provided for all areas where concentrated flow occurs from an area of two (2) or more acres and vegetative cover has been stripped from more than one (1) acre. Sediment basins shall be designed to detain the first one-half inch (½") of runoff from the graded area for a period of at least twenty-four (24) hours (approximately two thousand (2,000) cubic feet per acre graded).

Sediment basins shall have an outflow control structure capable of providing the required detention time. Outflow control structures shall consist of a gravel filter dam meeting the requirements of Section 14.5.2.F, or a perforated riser pipe.

Sediment basins shall also be provided with an overflow structure capable of passing the peak flow rate for storms up to and including the 10% AEP (10-year) storm. The required sediment control volume shall be provided below the elevation of the overflow structure. One foot (1') of freeboard shall be maintained over the 10% AEP high water elevation.

Perforated riser pipes shall have a minimum diameter of eight inches (8") and shall be constructed of schedule 40 or stronger PVC pipe, galvanized corrugated metal pipe, or other approved pipe material. Riser pipes must be provided with a cap. Plans shall specify the height of the riser pipe above the basin floor, the number and spacing of rows of perforations, and the number and diameter of perforations per row. One and one-half inch (1 ½ ") crushed rock shall be placed around the riser pipes to act as a filter. A typical riser pipe detail is shown in Figure 28.

Outlet pipes shall have a minimum diameter of eight inches (8") and may be constructed of corrugated polyethylene pipe, corrugated metal pipe, Schedule 40 or stronger PVC or reinforced concrete pipe.

Overflow spillways must be constructed of riprap, concrete or other approved, non-erodible material.

Typical sediment basin details are shown in Figures 26, 27 and 28.

Sedimentation basins can be provided as temporary or permanent practices and can also serve as a permanent water quality BMP with appropriate design modifications to meet the criteria set forth in Section 135.

Detention ponds can be used for temporary sediment basins, provided it can be demonstrated that flood control requirements can be met as well as sediment control requirements.

Accumulated sediment must be removed and vegetation established prior to final release of security.

14.5.c Erosion Protection

1. Seeding and mulching

All disturbed areas must be re-vegetated before temporary sediment controls can be removed. Soil stabilization (seed and mulch) shall be completed within thirty days of clearing or inactivity in construction. Requirements for re-vegetated areas are as follows:

a) Topsoil

Spreading of topsoil is required for permanent seeding areas only. Topsoil stripped from the site shall be stockpiled for reuse. A minimum of four inches (4") loose depth (before rolling or compacting) of topsoil must be spread on the area to be seeded.

b) Lime

After topsoil is spread, lime shall be spread at the rate of eight hundred to nine hundred (800 to 900) pounds effective neutralizing material (ENM) per acre.

c) Fertilizer

Fertilizer shall be 13-13-13, (thirteen (13) pounds each of nitrogen, phosphorus, and potassium per one hundred (100) pounds) and shall be applied at a rate of two hundred to three hundred (200 to 300) pounds per acre.

d) Seed

Seed mix shall consist of sixty percent to eighty percent (60% to 80%) Kentucky 31 tall fescue and twenty percent to forty percent (20% to 40%) annual ryegrass. Purity shall be at least ninety-seven percent (97%), germination shall be at least eighty-five percent (85%). Seed mixture shall be applied at a rate of one hundred to one hundred fifty (100 to 150) pounds per acre.

e) Mulch

Type 1 Mulch

Where slopes are less than 4:1, cereal grain mulch is required at the rate of one hundred (100) pounds per one thousand (1,000) square feet (forty-five hundred (4,500) pounds per acre). Cereal grain mulch shall meet the requirements of Section 802 of the Missouri State Specifications for Highway Construction (State specifications) for Type 1 mulch. Mulch may be applied by hand, however it must be evenly spread. It is preferred that mulch be applied with a mechanical blower.

Type 1 mulch must be thoroughly wetted after application.

Type 3 Mulch

Where slopes are 4:1 or greater Type 3 mulch ("hydromulch") meeting the requirements of Section 802 of the State specifications. Type 3 mulch shall be applied at a minimum rate of two thousand (2,000) pounds per acre.

f) Permanent seeding season

Permanent seeding seasons run from March 1 to June 1 and from August 15 to November 1. Where possible, operations shall be scheduled to allow final seeding during these periods. When seeding cannot be completed during these times, areas shall be seeded and mulched upon completion of grading with the amounts of lime, fertilizer, seed, and mulch specified above, regardless of the season. Any areas where growth has not been established shall be re-seeded during the next seeding season.

g) Temporary seeding

Temporary seeding shall be applied to lot areas, building areas and other areas planned to receive other permanent coverings. Spreading of topsoil is not required in temporary seeding areas. Lime, fertilizer, seed, and mulch shall be applied at the rates specified above.

h) Maintenance

Areas seeded between March 1 - June 1 or between August 15 - November 1 must be maintained until growth is firmly established as set forth in Section 14.3.4.E.

i) Other specifications

Other seeding and mulching specifications may be used with the written approval of the Public Works Director.

2. Cut and Fill Slopes

Cut and fill slopes shall be protected from erosion by construction of straw bale dikes, silt fences, diversion berms, or swales along the top of the slope.

Where drainage must be carried down the slopes, pipe drains, concrete flumes, riprap chutes, or other impervious areas must be provided. Suitable erosion control measures such as riprap stilling basins, must be provided at the bottom of the slope.

Diversions shall be maintained until permanent growth is firmly established on the slopes.

Typical diversion details are shown in Figure 29. Riprap chute details are shown in Figure 30.

3. Channels and Swales.

Permanent channels and swales shall be provided with a stabilized invert, as provided in Section 8.

4. Storm Sewer and Culvert Outlets

Erosion protection shall be provided at storm sewer and culvert outlets as provided in Section 7.

5. Ditch Checks

Straw bale ditch checks have proven to be generally ineffective due to improper installation and inability of bales to withstand the force of concentrated flow of water. Ditches, channels, and swales should be stabilized as soon as possible after grading by lining with erosion control blanket, sod, or installing permanent linings as described in Section 8.

Where ditches, channels, or swales cannot be stabilized within thirty (30) days after grading, rock check dams or sand bag check dams must be provided. Rock check dams may be used in ditches with a design water depth of up to two feet (2') for the 2-year storm. Sand bag check dams may be used in ditches with a design water depth of up to one foot (1') for the 2-year storm. Rock check dams are shown in Figure 31. Sand bag check dams are shown in Figure 32.

14.5.d Temporary Construction Entrance

A minimum of one (1) temporary construction entrance is required at each site. Additional temporary entrances may be provided if approved. The location of each construction entrance shall be shown on the SECP.

Only construction entrances designated on the sediment and erosion control plan may be used. Barricades shall be maintained if necessary to prevent access at other points until construction is complete.

Construction entrances shall be constructed of one and one-half inches (1 ½") clean crushed limestone and shall be a minimum of twenty-five feet (25') wide and fifty (50') feet long. Minimum thickness of crushed limestone surface shall be six inches (6"). Additional two inch (2") lifts of crushed limestone shall be added at the discretion of the City if the surface of the initial drive deteriorates or becomes too muddy to be effective.

In locations where an existing drive or street extends at least fifty feet (50') into the site, the existing drive may be designated as the construction entrance, and construction of a new gravel entrance is not required, unless job conditions warrant.

A permit must be obtained from the Neosho Public Works Department for temporary construction entrances on City roads. A permit must be obtained from the Missouri Department of Transportation (MODOT) whenever the entrance is located on State right-of-way.

14.5.e Cleaning Streets

Streets, both interior and adjacent to the site, shall be cleaned of sediment after each rainfall of one-half inch (½") or more and at the end of construction and prior to release of escrow.

14.5.f Dust Control

The contractor will be required to use water trucks to wet haul roads and construction areas to minimize dust leaving the site when conditions warrant.

14.5.h Sequencing and Scheduling

Costs of sediment and erosion control can be minimized if proper consideration is given to sequencing and scheduling construction.

Any special sequencing and scheduling considerations must be noted on the SECP. The contractor must provide a sequence of construction activities as a part of the SWPPP.

Rainfall Intensity-Duration-Frequency, Joplin, Missouri						
Duration Hr:Min	Annual Probability, Percent					
	1	2	4	10	20	50
	Rainfall Intensity, Inches per Hour					
00:05	10.20	9.30	8.41	7.25	6.47	5.39
00:06	9.82	8.97	8.09	7.01	6.23	5.19
00:07	9.48	8.68	7.79	6.75	6.00	5.02
00:08	9.16	8.35	7.49	6.51	5.79	4.84
00:09	8.83	8.07	7.26	6.28	5.59	4.66
00:10	8.53	7.79	7.03	6.06	5.40	4.51
00:11	8.24	7.52	6.77	5.86	5.22	4.35
00:12	7.97	7.26	6.55	5.66	5.05	4.22
00:13	7.71	7.03	6.36	5.49	4.90	4.08
00:14	7.48	6.82	6.16	5.32	4.75	3.96
00:15	7.27	6.63	5.96	5.16	4.61	3.83
00:16	7.10	6.49	5.86	5.05	4.49	3.73
00:17	6.96	6.34	5.72	4.92	4.37	3.64
00:18	6.82	6.23	5.61	4.84	4.29	3.54
00:19	6.72	6.14	5.51	4.74	4.20	3.46
00:20	6.62	6.04	5.40	4.67	4.11	3.38
00:21	6.52	5.96	5.31	4.59	4.04	3.30
00:22	6.44	5.87	5.23	4.52	3.97	3.22
00:23	6.36	5.79	5.16	4.48	3.92	3.15
00:24	6.28	5.74	5.09	4.41	3.84	3.09
00:25	6.20	5.66	5.00	4.35	3.79	3.01
00:26	6.14	5.61	4.95	4.31	3.73	2.95
00:27	6.07	5.54	4.89	4.25	3.68	2.91
00:28	5.99	5.49	4.82	4.21	3.62	2.84
00:29	5.94	5.41	4.77	4.16	3.57	2.79
00:30	5.88	5.37	4.72	4.10	3.52	2.74
00:35	5.54	5.08	4.42	3.88	3.29	2.51
00:40	5.22	4.78	4.14	3.64	3.08	2.32
00:45	4.91	4.50	3.89	3.42	2.86	2.13
00:50	4.61	4.20	3.64	3.20	2.67	1.99
00:55	4.32	3.95	3.42	3.00	2.52	1.86
01:00	4.11	3.75	3.25	2.86	2.38	1.80



**CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA**

**RAINFALL DATA TABLE
INTENSITY-DURATION-FREQUENCY**

TABLE A

Rainfall Depth-Duration-Frequency, Joplin, Missouri						
Duration Hr:Min	Annual Probability, Percent					
	1	2	4	10	20	50
	Rainfall Depth, Inches					
1:00	4.10	3.73	3.27	2.87	2.40	1.80
1:15	4.42	4.00	3.48	3.01	2.50	1.91
1:30	4.68	4.22	3.70	3.19	2.60	2.00
1:45	4.87	4.39	3.87	3.32	2.70	2.10
2:00	5.01	4.55	4.06	3.45	2.82	2.19
2:15	5.21	4.69	4.20	3.55	2.92	2.29
2:30	5.32	4.82	4.33	3.67	3.04	2.38
2:45	5.46	4.95	4.45	3.77	3.14	2.47
3:00	5.54	5.05	4.56	3.85	3.26	2.54
3:30	5.73	5.25	4.69	3.98	3.41	2.66
4:00	5.88	5.44	4.80	4.06	3.51	2.74
4:30	6.04	5.62	4.87	4.13	3.61	2.79
5:00	6.19	5.79	4.94	4.20	3.69	2.85
5:30	6.32	5.92	4.99	4.25	3.75	2.87
6:00	6.45	6.06	5.04	4.30	3.79	2.91
7:00	6.72	6.27	5.18	4.41	3.90	2.96
8:00	6.99	6.44	5.35	4.53	4.02	3.02
9:00	7.28	6.61	5.53	4.66	4.11	3.12
10:00	7.55	6.75	5.70	4.80	4.20	3.17
11:00	7.79	6.87	5.88	4.94	4.27	3.23
12:00	8.01	7.02	6.03	5.05	4.35	3.30
15:00	8.44	7.31	6.40	5.35	4.55	3.48
18:00	8.74	7.60	6.66	5.60	4.72	3.65
21:00	8.96	7.86	6.90	5.82	4.88	3.82
24:00	9.08	8.05	7.06	6.01	5.01	3.96

Source: Bulletin 71, Rainfall Frequency Atlas of the Midwest, Huff and Angel, 1992
National Weather Service Hydro 35, Five- to 60-Minute Precipitation Frequency for the
Eastern and Central United States, 1977.



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
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RAINFALL DATA TABLE
DEPTH-DURATION-FREQUENCY

TABLE A, Continued

Huff's Median Time Distributions of Heavy Storm Rainfall. Cumulative storm rainfall (%) versus cumulative storm time (%). Source: *Rainfall Frequency Atlas of the Midwest*, F.A. Huff and J. R. Angel, Midwestern Climate Center, 1992.

Cum % of storm time	Point Rainfall				Cum % of storm time	10 to 50 Square Miles				Cum % of storm time	50 to 400 Square Miles				Cum % of storm time
	Quartile					Quartile					Quartile				
	1st	2nd	3rd	4th		1st	2nd	3rd	4th		1st	2nd	3rd	4th	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	16	3	3	2	5	12	3	2	2	5	8	2	2	2	5
10	33	8	6	5	10	25	6	5	4	10	17	4	4	3	10
15	43	12	9	8	15	38	10	8	7	15	34	8	7	5	15
20	52	16	12	10	20	51	14	12	9	20	50	12	10	7	20
25	60	22	15	13	25	62	21	14	11	25	63	21	12	9	25
30	66	29	19	16	30	69	30	17	13	30	71	31	14	10	30
35	71	39	23	19	35	74	40	20	15	35	76	42	16	12	35
40	75	51	27	22	40	78	52	23	18	40	80	53	19	14	40
45	79	62	32	25	45	81	63	27	21	45	83	64	22	16	45
50	82	70	38	28	50	84	72	33	24	50	86	73	29	19	50
55	84	76	45	32	55	86	78	42	27	55	88	80	39	21	55
60	86	81	57	35	60	88	83	55	30	60	90	86	54	25	60
65	88	85	70	39	65	90	87	69	34	65	92	89	68	29	65
70	90	88	79	45	70	92	90	79	40	70	93	92	79	35	70
75	92	91	85	51	75	94	92	86	47	75	95	94	87	43	75
80	94	93	89	59	80	95	94	91	57	80	96	96	92	54	80
85	96	95	92	72	85	96	96	94	74	85	97	97	95	75	85
90	97	97	95	84	90	97	97	96	88	90	98	98	97	92	90
95	98	98	97	92	95	98	98	98	95	95	99	99	99	97	95
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100



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HUFF 'S QUARTILE
RAINFALL DISTRBTIONS

TABLE B

SURFACE RUNOFF COEFFICIENTS

LAND USE	PROPORTIONAL SURFACE CONDITION		RATIONAL METHOD "C"
	IMPERV.	TURF OR =	
Residential Low-Medium Density (Single Family & Duplex)	0.35	0.65	0.44
Residential Medium-high Density (6 or fewer D.U. per bldg. and mobile home parks)	0.60	0.40	0.62
Residential High Density (Over 6 D.U. per bldg.)	0.80	0.20	0.76
Public/Semi-Public (Schools, Gov't., Institutional)	0.65	0.35	0.66
Commercial/Industrial; Office Parks	0.70	0.30	0.69
Neighborhood Commercial	0.85	0.15	0.80
General Commercial (Shopping Centers)	0.95	0.05	0.87
Central Business District	1.00	0.00	0.90
Industrial	0.80	0.20	0.76
Open Space, Parks, Golf Courses	0.10	0.90	0.27
Agricultural/Cultivated	0.05	0.95	0.24
All Land Uses:			
100 % Impervious Surfaces			0.90
100 % Pervious Surfaces (With maintained turf cover or =)			0.20

Ref: SCS, APWA (3/90)



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SURFACE RUNOFF
COEFFICIENTS

TABLE C

Runoff Curve Numbers (Average Watershed Conditions, $I_a = 0.2S$)

Land Use Description	Curve Numbers for Hydrologic Soil Group			
	A	B	C	D
Fully developed urban areas ^a (vegetation established)				
Lawns, open spaces, parks, golf courses, cemeteries, etc.				
Good condition; grass cover on 75% or more of the area	39	61	74	80
Fair condition; grass cover on 50% to 75% of the area	49	69	79	84
Poor condition; grass cover on 50% or less the area	68	79	86	89
Paved parking lots, roofs, driveways, etc.	98	98	98	98
Streets and roads				
Paved with curbs and storm sewers	98	98	98	98
Gravel	76	85	89	91
Dirt	72	82	87	89
Paved with open ditches	83	89	92	93
	Average % Impervious ^b			
Industrial, commercial and business areas	85	89	92	94
	80	86	91	93
	75	83	89	92
	70	80	87	91
Row houses, town houses, and residential	65	77	85	90
with lot sizes 1/8 acre or less				92
Residential: average lot size				
1/4 acre	38	61	75	83
	30	57	72	81
	25	54	70	80
	20	51	68	79
	12	46	65	77
Developing urban areas ^c (no vegetation established)				
Newly graded area	77	86	91	94



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

Runoff Curve Numbers						
Land Use Description	Hydrologic Condition	Curve Numbers for Hydrologic Soil Group				
		A	B	C	D	
Meadow	-	30	58	71	78	
Forestland-grass or	Poor	55	73	82	86	
orchards -evergreen or	Fair	44	65	76	82	
Deciduous	Good	32	58	72	79	
Brush	Poor	48	67	77	83	
	Good	20	48	65	73	
Woods	Poor	45	66	77	83	
	Fair	36	60	73	79	
	Good	25	55	70	77	
Farmsteads	-	59	74	82	86	
Forest-Range						
Herbaceous	Poor	-	79	86	92	
	Fair	-	71	80	89	
	Good		61	74	84	
Land use	Treatment of Practice	Hydrologic Condition	A	B	C	D
Cultivated agricultural land						
Fallow	Straight row	-	77	86	91	94
	Conservation tillage	Poor	76	85	90	93
	Conservation tillage	Good	74	83	88	90
Row crops	Straight row	Poor	72	81	88	91
	Straight row	Good	67	78	85	89
	Conservation tillage	Poor	71	80	87	90
	Conservation tillage	Good	64	75	82	85



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

Land use	Treatment of Practice	Hydrologic Condition	A	B	C	D
Row crops	Contoured	Poor	70	79	84	88
	Contoured	Good	65	75	82	86
	Contoured and	Poor	69	78	83	87
	conservation tillage	Good	64	74	81	85
	Contoured and terraces	Poor	66	74	80	82
	Contoured and terraces	Good	62	71	78	81
	Contoured and terraces and	Poor	65	73	79	81
	conservation tillage	Good	61	70	77	80
Small grain	Straight row	Poor	65	76	84	88
	Straight row	Good	63	75	83	87
	Conservation tillage	Poor	64	75	83	86
	Conservation tillage	Good	60	72	80	84
	Contoured	Poor	63	74	82	85
	Contoured	Good	61	73	81	84
	Contoured and	Poor	62	73	81	84
	conservation tillage	Good	60	72	80	83
	Contoured and terraces	Poor	61	72	79	82
	Contoured and terraces	Good	59	70	78	81
	Contoured and terraces and	Poor	60	71	78	81
	conservation tillage	Good	58	69	77	80
Close-seeded legumes or rotation meadow ^c	Straight row	Poor	66	77	85	89
	Straight row	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	Contoured	Good	55	69	78	83
	Contoured and terraces	Poor	63	73	80	83
	Contoured and terraces	Good	51	67	76	80



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

Land use	Treatment of Practice	Hydrologic Condition	A	B	C	D
Noncultivated	No mechanical treatment	Poor	68	79	86	89
agricultural land	No mechanical treatment	Fair	49	69	79	84
pasture or range	No mechanical treatment	Good	39	61	74	80
	Contoured	Poor	47	67	81	88
	Contoured	Fair	25	59	75	83
	Contoured	Good	6	35	70	79

^a For land uses with impervious areas, curve numbers are computed assuming that 100% of runoff from impervious areas is directly connected to the drainage system. Pervious areas (lawn) are considered to be equivalent to lawns in good condition and the impervious areas have a *CN* of 98.

^b Includes paved streets.

^c Use for the design of temporary measures during grading and construction. Impervious area percent for urban areas under development vary considerably. The user will determine the percent impervious. Then using the newly graded area *CN* and Figure 8.7.1a or b, the composite *CN* can be computed for any degree of development.

^d For conservation tillage poor hydrologic condition, 5% to 20% of the surface is covered with residue (less than 750-lb/acre row crops or 300-lb/acre small grain).

For conservation tillage good hydrologic condition, more than 20% of the surface is covered with residue (greater than 750-lb/acre row crops or 300-lb/acre small grain).

^e Close-drilled or broadcast.

For noncultivated agricultural land:

Poor hydrologic condition has less than 25% ground cover density.

Fair hydrologic condition has between 25% and 50% ground cover density.

Good hydrologic condition has more than 50% ground cover density.

For forest-range:

Poor hydrologic condition has less than 30% ground cover density.

Fair hydrologic condition has between 30% and 70% ground cover density.

Good hydrologic condition has more than 70% ground cover density.

Source: U.S. Department of Agriculture Soil Conservation Service (1986).



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

MANNING'S ROUGHNESS COEFFICIENTS ("n")

TYPE OF CHANNEL	n
Closed Conduits	
Reinforced Concrete Pipe	0.013
Reinforced Concrete Elliptical Pipe	0.013
Corrugated Metal Pipe:	
2-2/3 x 1/2 in Annular Corrugations unpaved -plain	0.024
2-2/3 x 1/2 in Annular Corrugations paved invert	0.021
3 x 1 in Annular Corrugations unpaved - plain	0.027
3 x 1 in Annular Corrugations paved invert	0.023
6 x 2 in Corrugations unpaved - plain	0.033
6 x 2 Corrugations paved invert	0.028
Vitrified Clay Pipe	0.013
Asbestos Cement Pipe	0.012
Open Channels (Lined)	
Gabions	0.025
Concrete	
Trowel Finish	0.013
Float Finish	0.015
Unfinished	0.017
Concrete, bottom float finished, with sides of	
Dressed Stone	0.017
Random Stone	0.020
Cement Rubble Masonry	0.025
Dry Rubble or Riprap	0.030
Gravel bottom, side of	
Random Stone	0.023
Riprap	0.030
Grass (Sod)	0.035
Open Channels (Unlimited) Excavated or Dredged	
Earth, straight and uniform	0.027
Earth, winding and sluggish	0.035
Natural Stream	
Clean stream, straight	0.030
Stream with pools, sluggish reaches, heavy underbrush	0.100
Flood Plains	
Grass, no brush	0.030
With some brush	0.090
Street Curbing	0.014

Ref: APWA (3/90)



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MANNING' S ROUGHNESS
COEFFICIENTS (n)

TABLE F

HEAD LOSS COEFFICIENTS (k) FOR HYDRAULIC CALCULATIONS

CONDITIONS	k
Manhole, junction boxes and inlets with shaped inverts:	
Thru Flow	0.15
Junction	0.4
Contraction Transition	0.1
Expansion Transition	0.2
90 degree bend	0.4
45 degree and less bends	0.3
Culvert outlet	1.0
Culvert inlets:	
Pipe, Concrete	
Projecting from fill, socket end (grooved end)	0.2
Projecting from fill, sq cut end	0.5
Headwall or headwall and wingwalls	
Socket end of pipe (grooved end)	0.2
Square edge	0.5
Round (radius = 1/12D)	0.2
Mitered to conform to fill slope	0.7
Standard end section	0.5
Beveled edges, 33.7° or 45° bevels	0.2
Side-or-slope-tapered inlet	0.2
Pipe, or Pipe-Arch, corrugated Metal	
Projecting from fill (not headwall)	0.9
Headwall or headwall and wingwalls square edge	0.5
Mitered to conform to fill slope, paved	
or unpaved slope	0.7
Standard end section	0.5
Beveled edges, 33.7° or 45° bevels	0.2
Side-or-slope-tapered inlet	0.2
Box Reinforced Concrete	
Headwall parallel to embankment (no wingwalls)	
Square edge on 3 edges	0.5
Rounded on 3 edges to radius of 1/12 barrel	
dimension, or beveled edges on 3 sides	0.2
Wingwalls at 30° to 75° to barrel	
Square edged at crown	0.4
Crown edge rounded to radius of 1/12 barrel	
dimension, or beveled top edge	0.20
Wingwall at 10° to 25° to barrel	
Square edged at crown	0.5
Wingwalls parallel (extension of sides)	
Square edged at crown	0.7
Side-or-slope-tapered inlet	0.2

Ref: APWA (3/90)



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CRITERIA

HEAD LOSS
COEFFICIENTS

TABLE G

CURB OPENING INLETS CAPACITY INSTALLED ON SLOPING GUTTERS

FLOW DEPTH @ CURB (FEET)	INLET INTERCEPTION CAPACITY IN CUBIC FEET PER SECOND (CFS)								
	INLET OPENING LENGTH IN FEET								
	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
0.05	0.14	0.17	0.20	0.22	0.24	0.25	0.27	0.28	0.28
0.10	0.33	0.41	0.48	0.54	0.60	0.66	0.71	0.77	0.81
0.15	0.55	0.67	0.79	0.91	1.02	1.13	1.23	1.33	1.43
0.20	0.78	0.96	1.14	1.31	1.48	1.65	1.81	1.96	2.11
0.25	1.03	1.27	1.51	1.75	1.98	2.20	2.42	2.64	2.85
0.30	1.29	1.60	1.91	2.21	2.51	2.80	3.09	3.37	3.65
0.35	1.58	1.96	2.33	2.70	3.07	3.43	3.79	4.14	4.49
0.40	1.87	2.33	2.78	3.22	3.66	4.10	4.53	4.95	5.37
0.45	2.18	2.72	3.24	3.77	4.29	4.80	5.31	5.81	6.31
0.50	2.51	3.12	3.73	4.34	4.93	5.53	6.12	6.70	7.28
0.55	2.85	3.55	4.24	4.93	5.61	6.29	6.96	7.63	8.29
0.60	3.20	3.98	4.76	5.54	6.31	7.07	7.83	8.59	9.34

INSTALLATION CRITERIA:

Gutter Depression At Inlet	= 4.0" (Minimum)
Clear Height Of Opening	= 6.0" (Minimum)
Capacity Reduction For Clogging	= 20 %

Ref: MoDOT

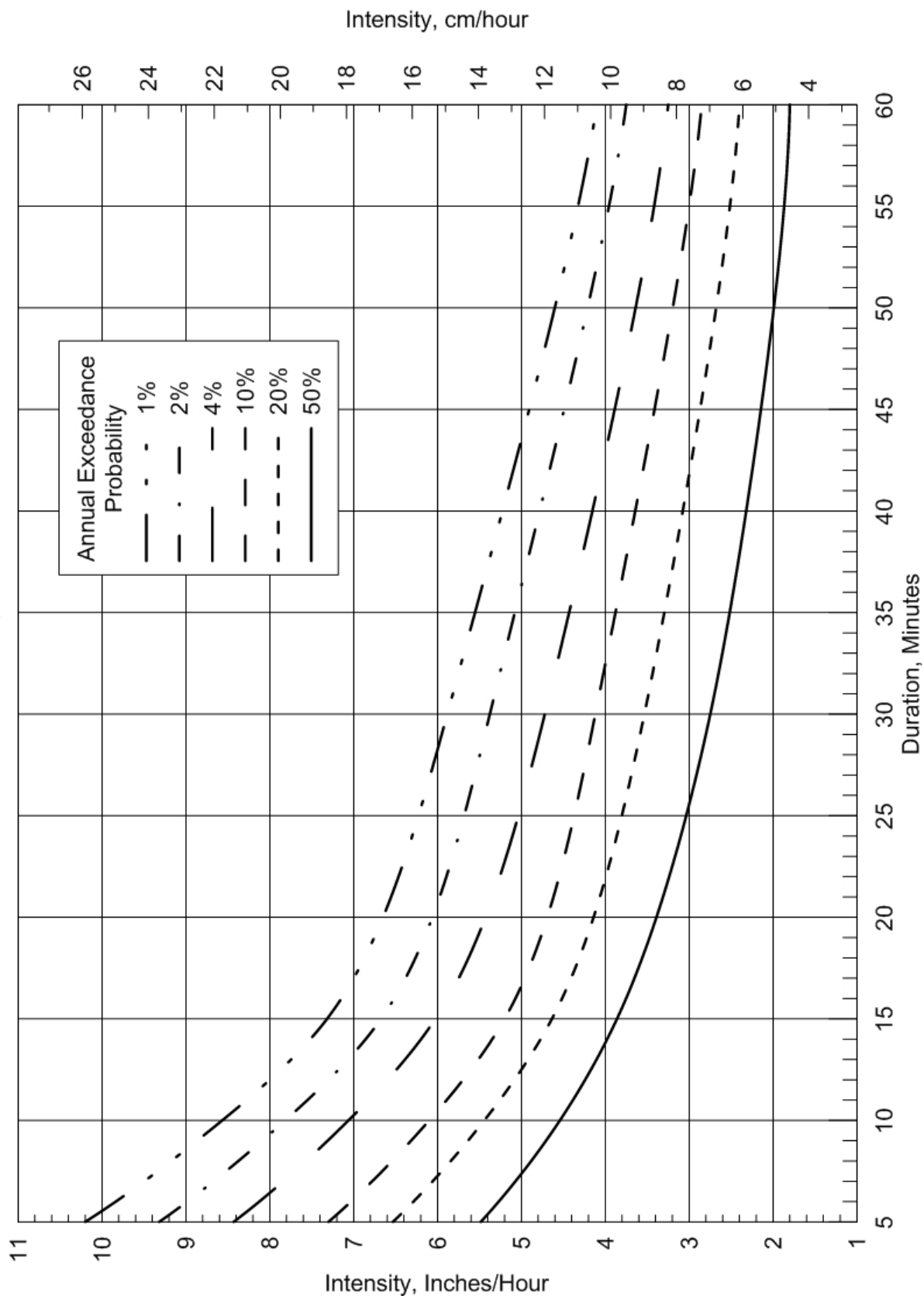


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STORMWATER MANAGEMENT
CRITERIA

CURB OPENING INLETS
CAPACITY ON GRADE

TABLE H

Rainfall Intensity-Duration-Frequency Carl Junction, Missouri

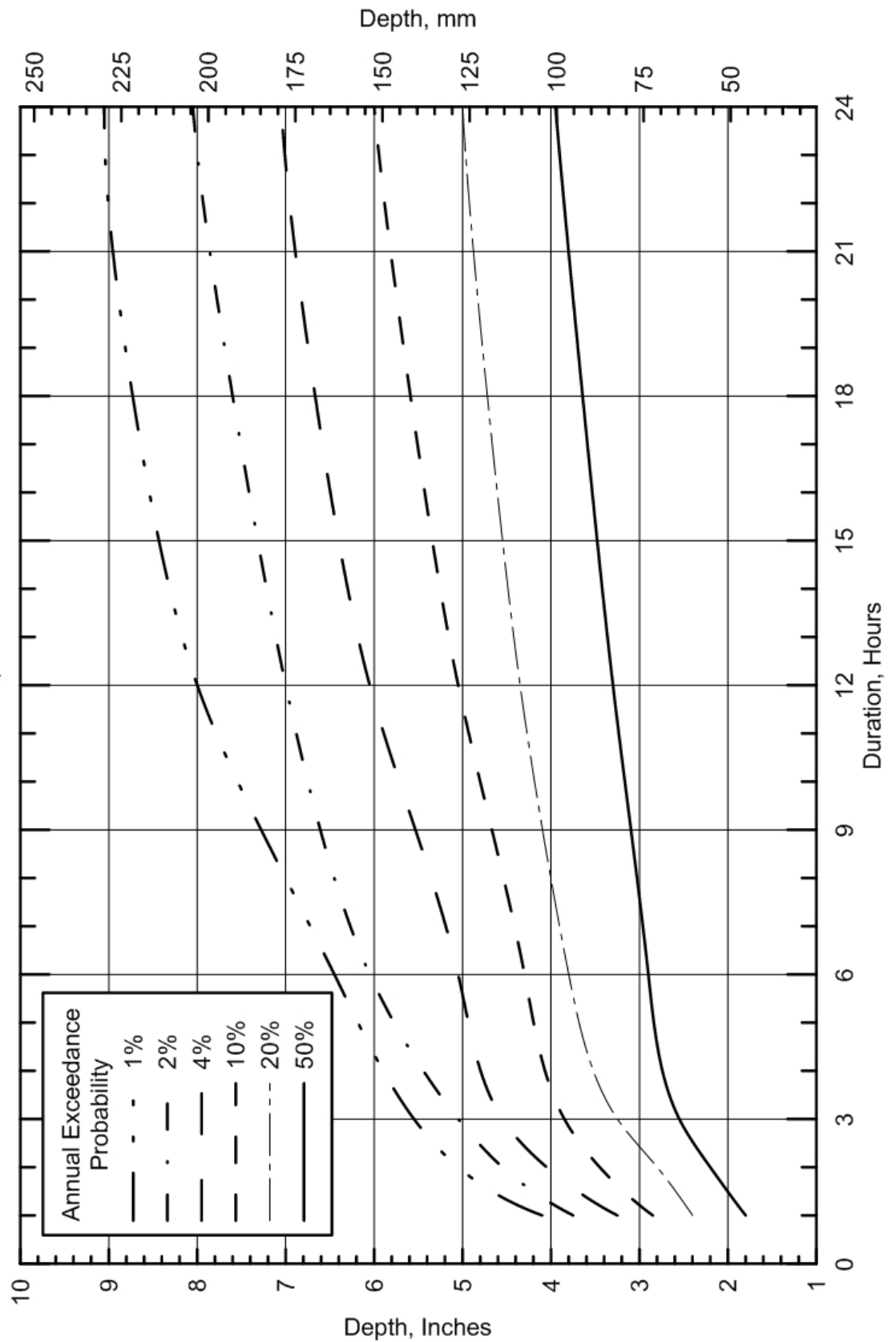


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STORMWATER MANAGEMENT
CRITERIA

RAINFALL
IDF CURVES

FIGURE 1

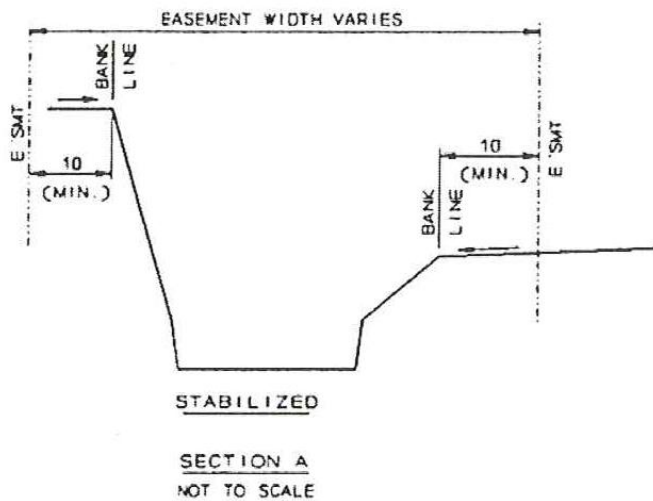
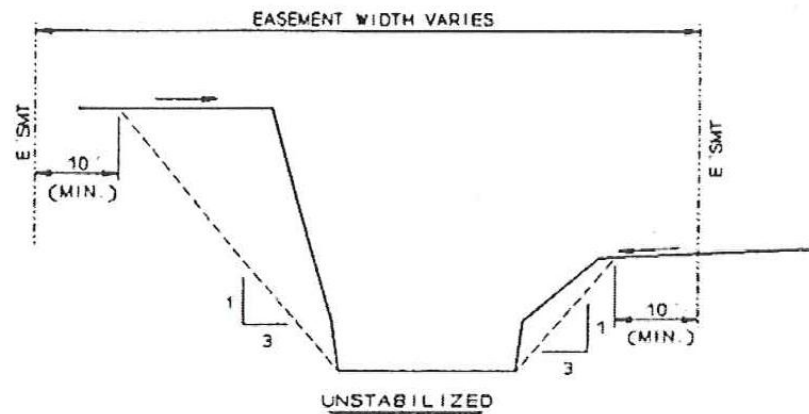
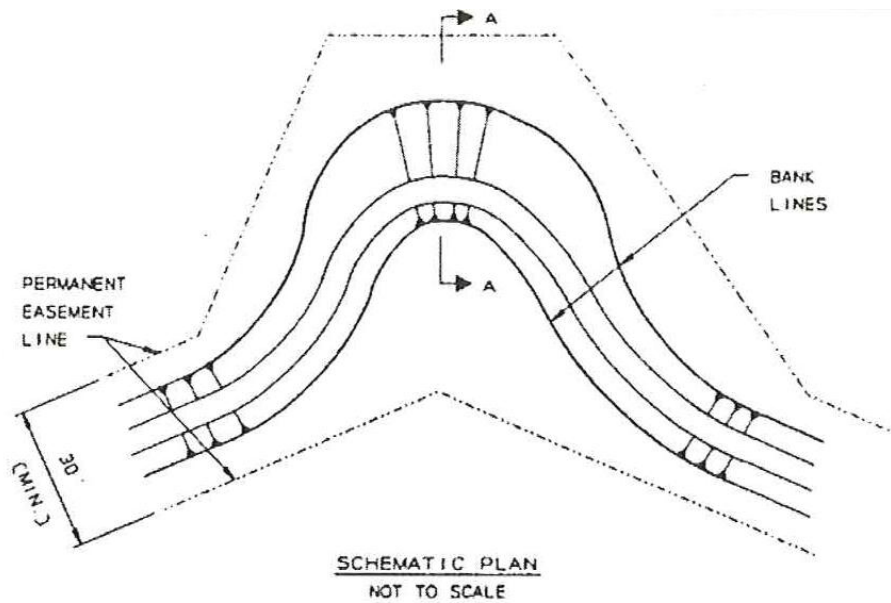
Rainfall Depth-Duration-Frequency Carl Junction, Missouri



CARL JUNCTION, MISSOURI
 STORMWATER MANAGEMENT
 CRITERIA

RAINFALL
 DDF CURVES

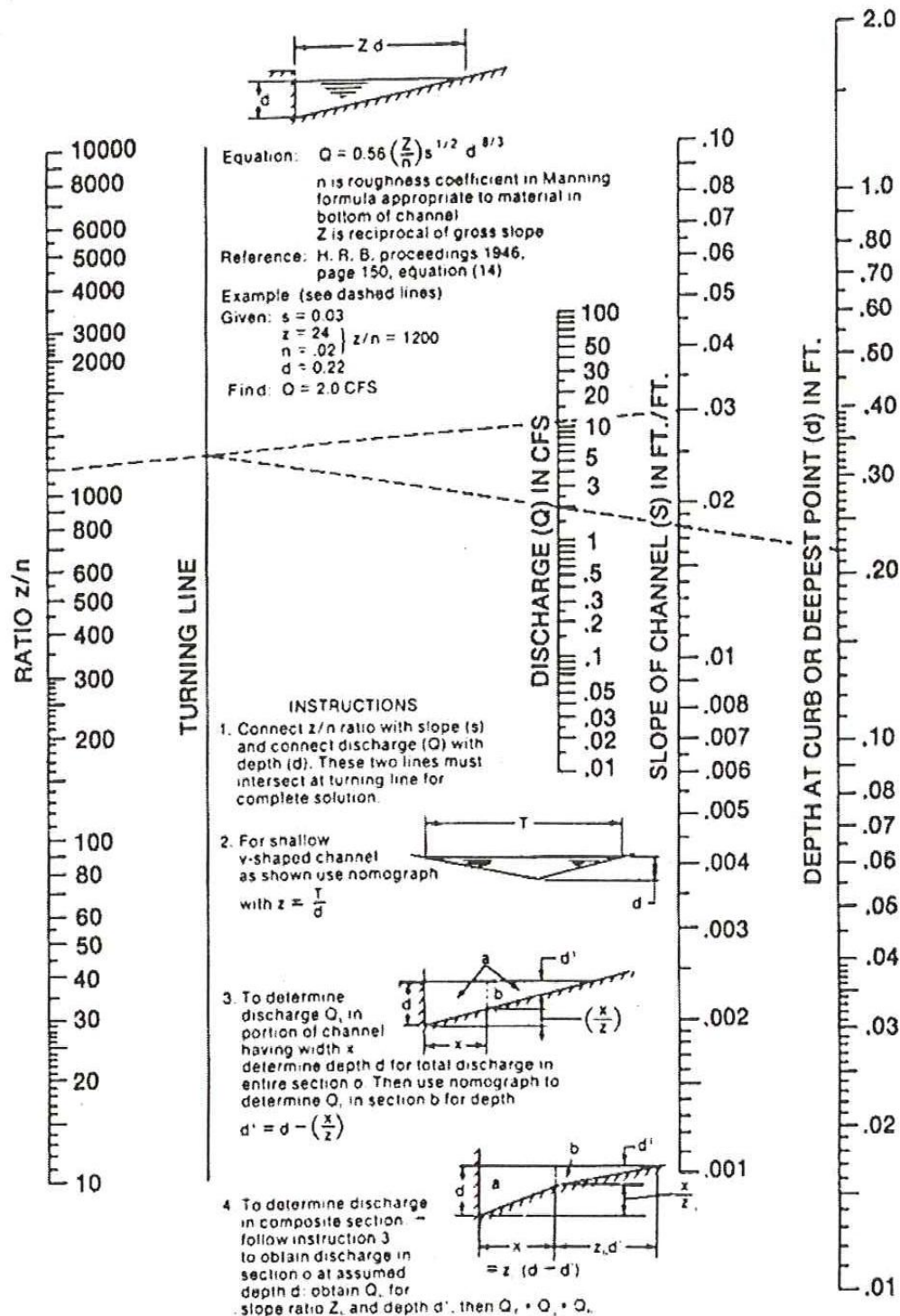
FIGURE 2



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STORMWATER MANAGEMENT
CRITERIA

PERMANENT EASEMENT
CHANNELS

FIGURE 3



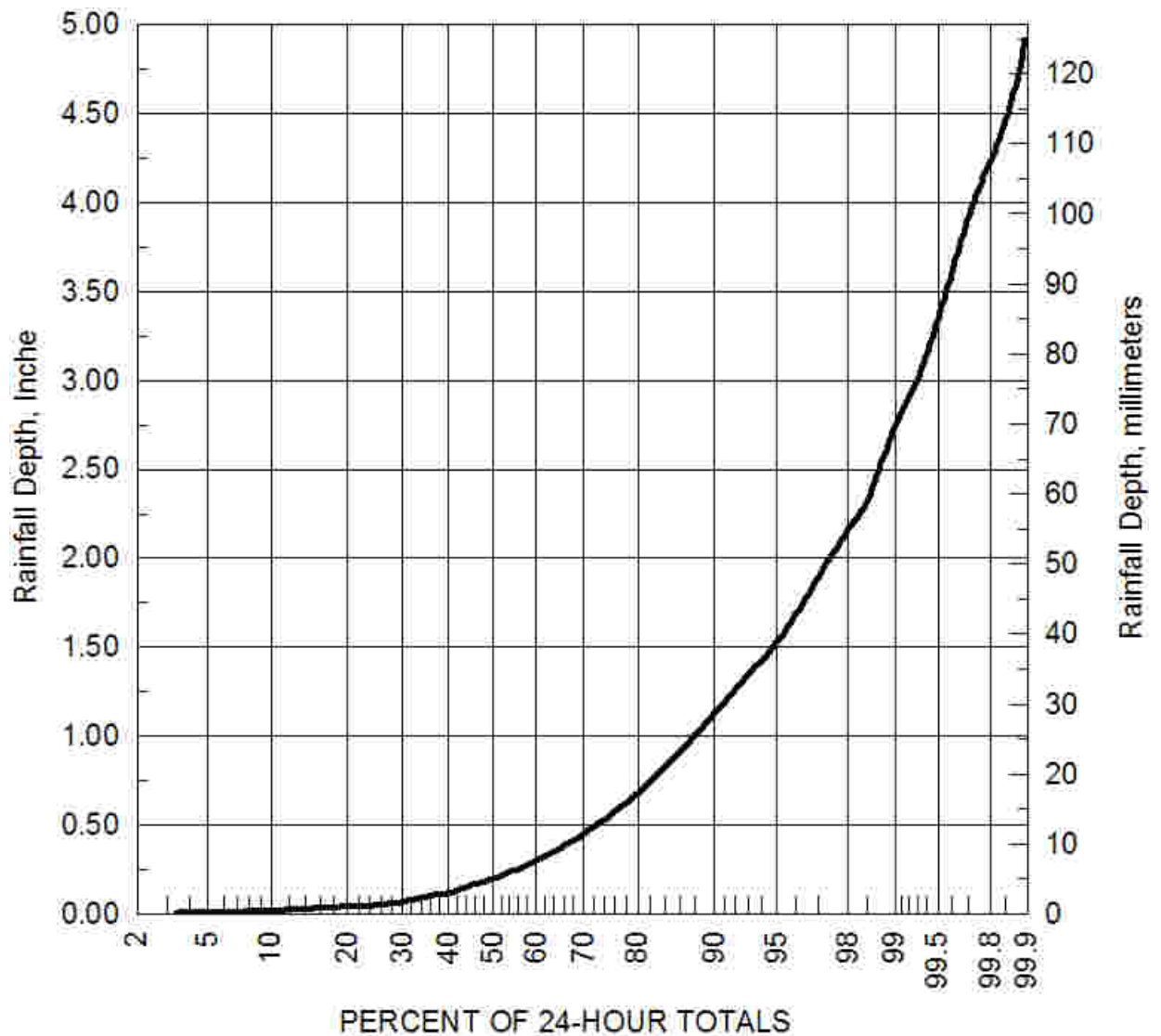
Ref: APWA (3/90)



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 STORMWATER MANAGEMENT
 CRITERIA

STREET GUTTER
 HYDRAULICS

FIGURE 4



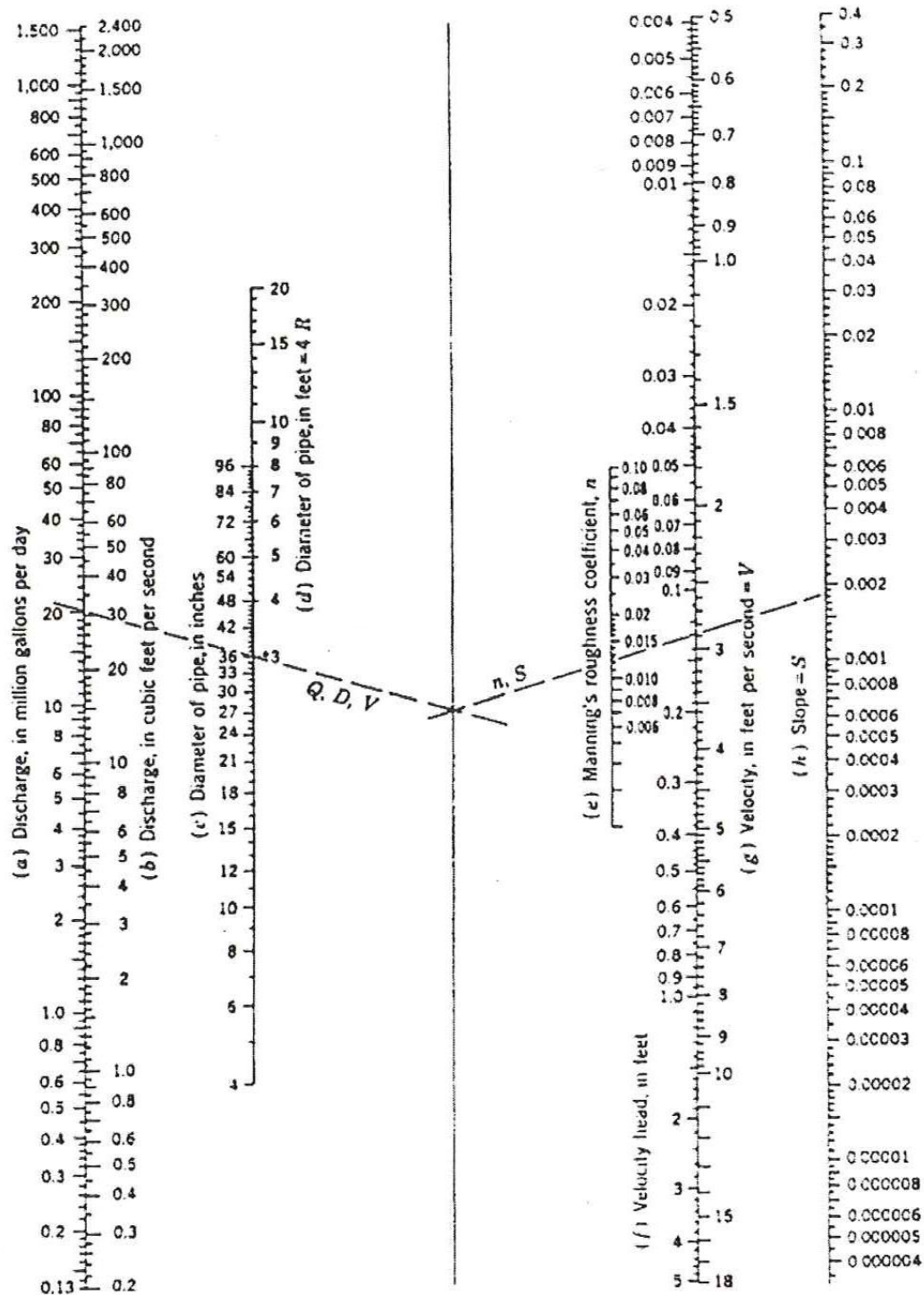
NATIONAL WEATHER SERVICE, HOURLY PRECIPITATION, JOPLIN, MISSOURI
 PERIOD OF RECORD July 1, 1948— December 31, 2006



CARL JUNCTION, MISSOURI
 STORMWATER MANAGEMENT
 CRITERIA

RAINFALL
 24-HOUR TOTALS

FIGURE 5



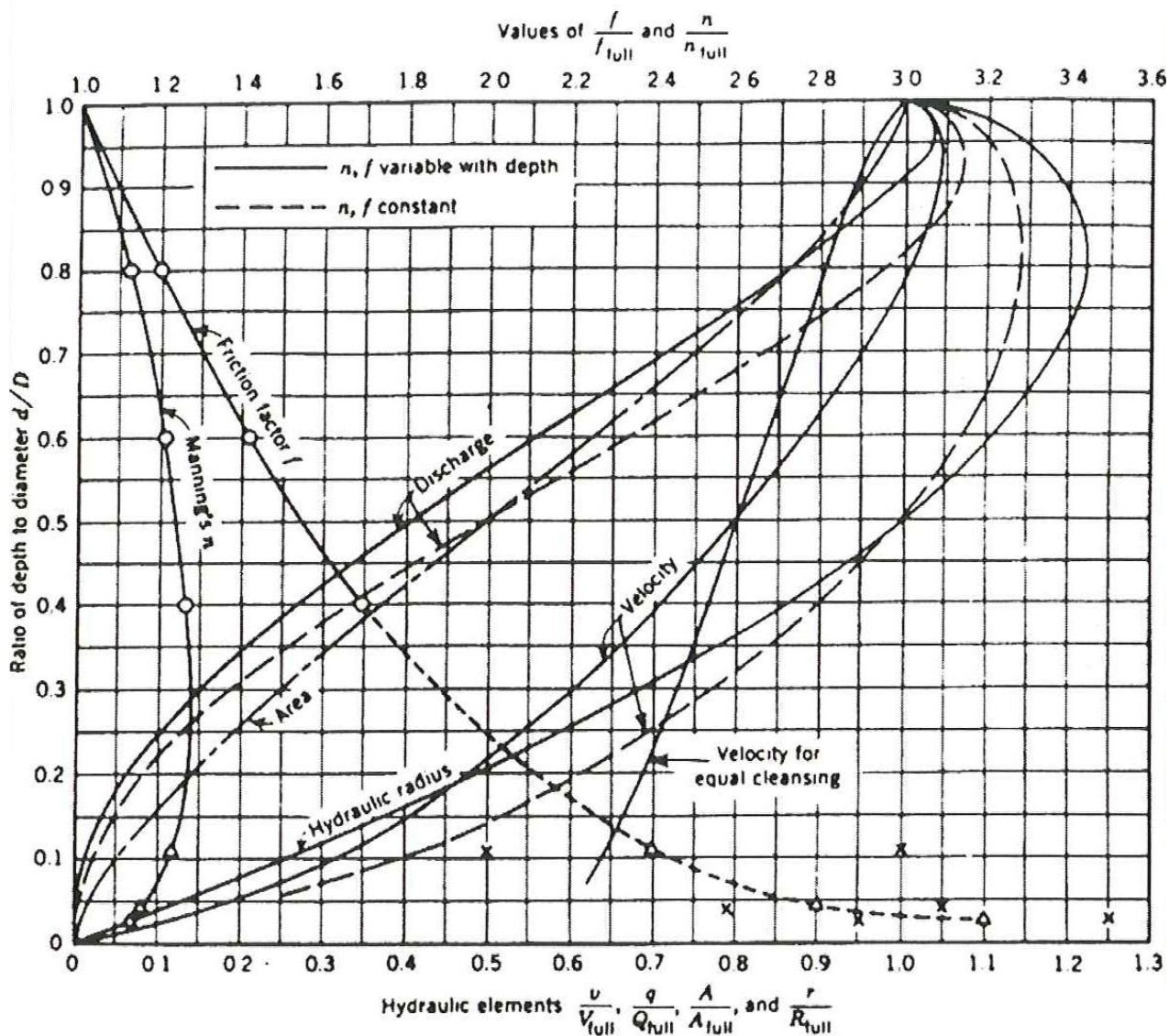
Ref: APWA (3/90)



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STORMWATER MANAGEMENT
CRITERIA

FLOW IN PIPES
MANNING' S FORMULA

FIGURE 7



v = Actual velocity of flow (fps)
 V_{full} = Velocity flowing full (fps)
 q = Actual quantity of flow (cfs)
 Q_{full} = Capacity flowing full (cfs)

A = Area occupied by flow (ft²)
 A_{full} = Area of pipe (ft²)
 r = Actual hydraulic radius (ft.)
 R_{full} = Hydraulic radius of full pipe (ft.)

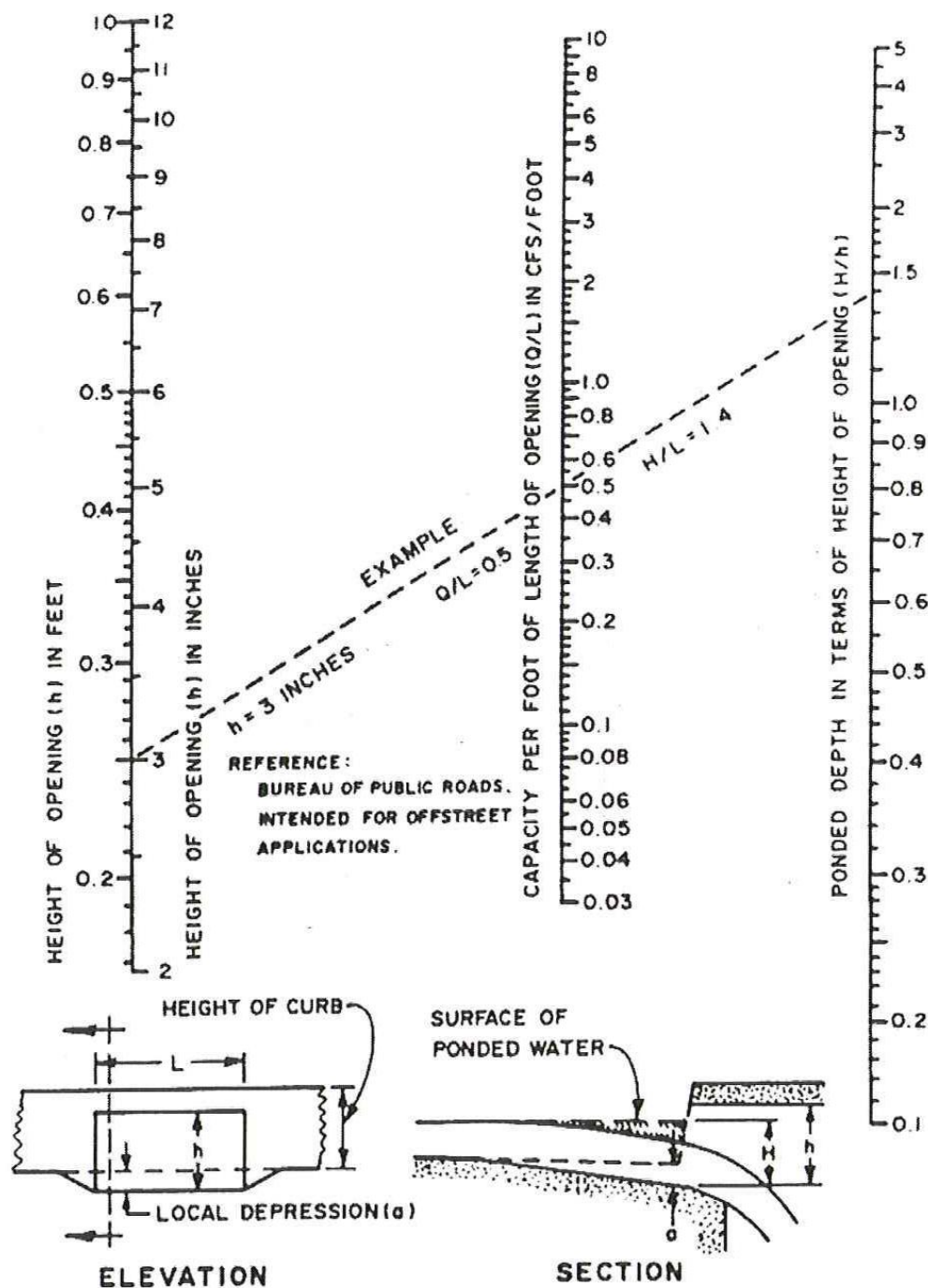
Ref: APWA (3/90)



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 STORMWATER MANAGEMENT
 CRITERIA

HYDRAULIC ELEMENTS
 CIRCULAR CONDUIT

FIGURE 8



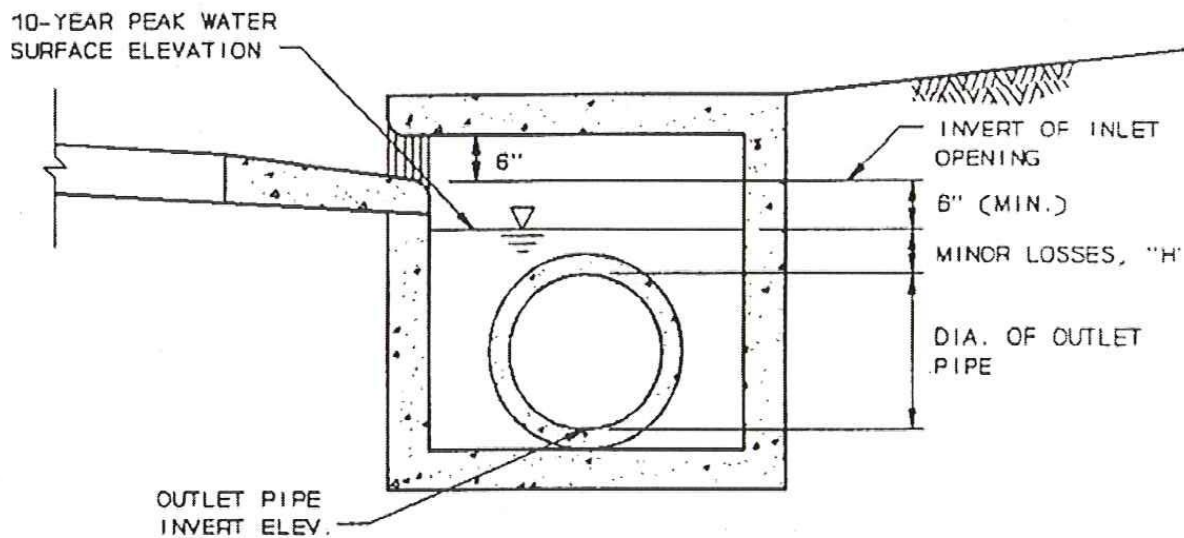
Ref: APWA (3/90)



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STORMWATER MANAGEMENT
CRITERIA

CURB OPENING INLETS
CAPACITY IN SUMP

FIGURE 9



$$H = K(V^2 / 2G)$$

NOTES:

1. SEE TABLE F FOR VALUES OF "K".
2. $V = Q/A$ WHERE
 Q = FLOW, IN CFS
 A = CROSS-SECTIONAL AREA OF OUTLET PIPE, IN SQ. FT.
3. $2G = 64.4$ FT. PER SEC. PER SEC.

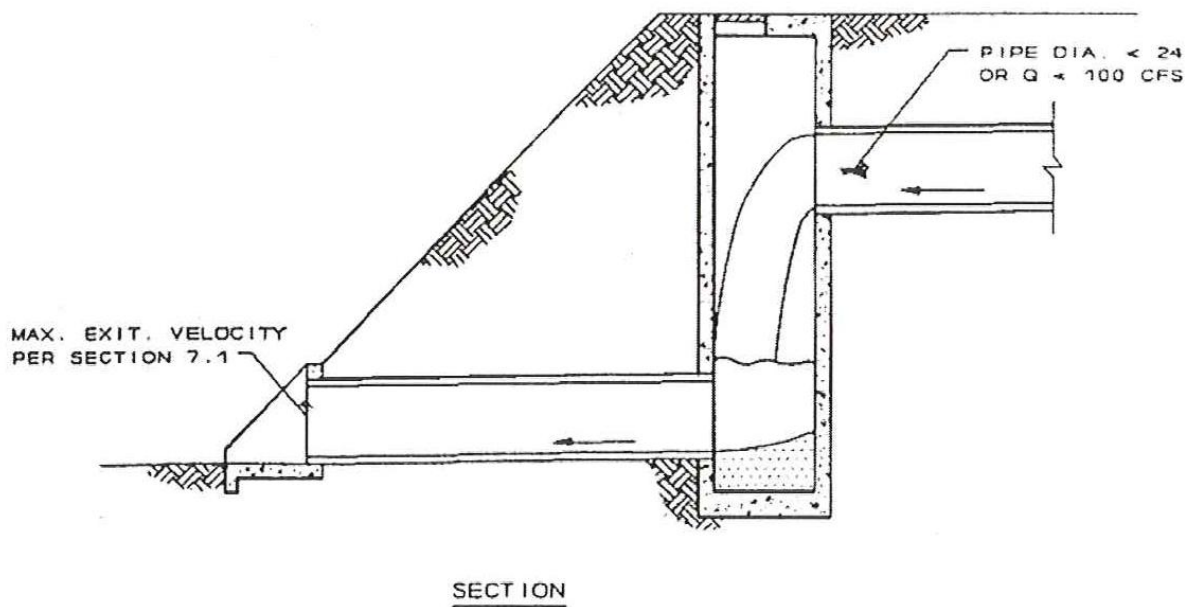
Ref: APWA (3/90)



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STORMWATER MANAGEMENT
CRITERIA

CURB OPENING INLETS
DIMENSIONAL CRITERIA

FIGURE 10



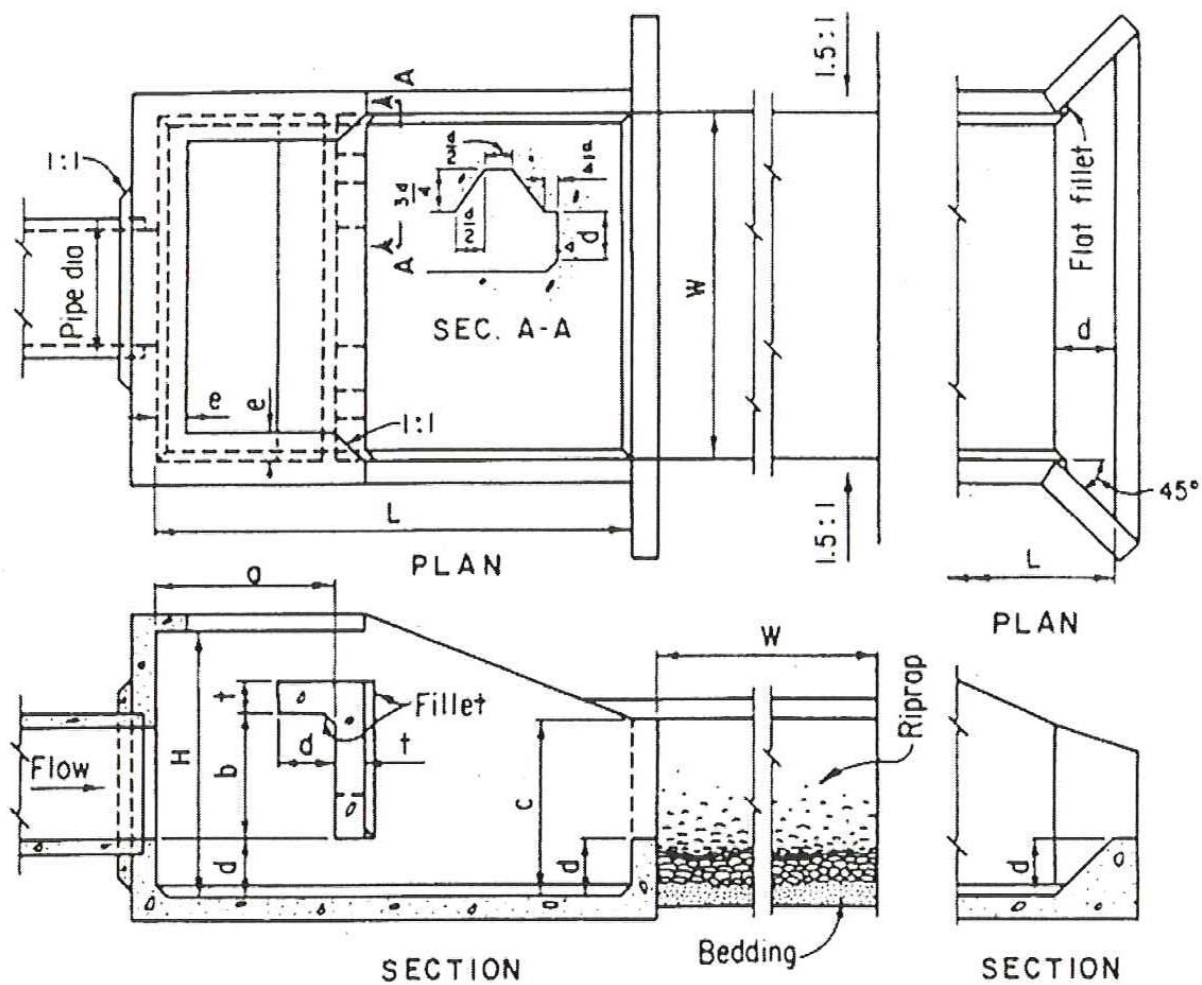
Ref: U.S. Bureau of Reclamation



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STORMWATER MANAGEMENT
CRITERIA

ENCLOSED DROP
ENERGY DISSIPATORS

FIGURE 11



$$\begin{aligned}
 H &= 3W/4 & c &= W/2 \\
 L &= 4W/3 & d &= W/6 \\
 o &= W/2 & e &= W/12 \\
 b &= 3W/8 & t &= W/12 \text{ suggested minimum thickness}
 \end{aligned}$$

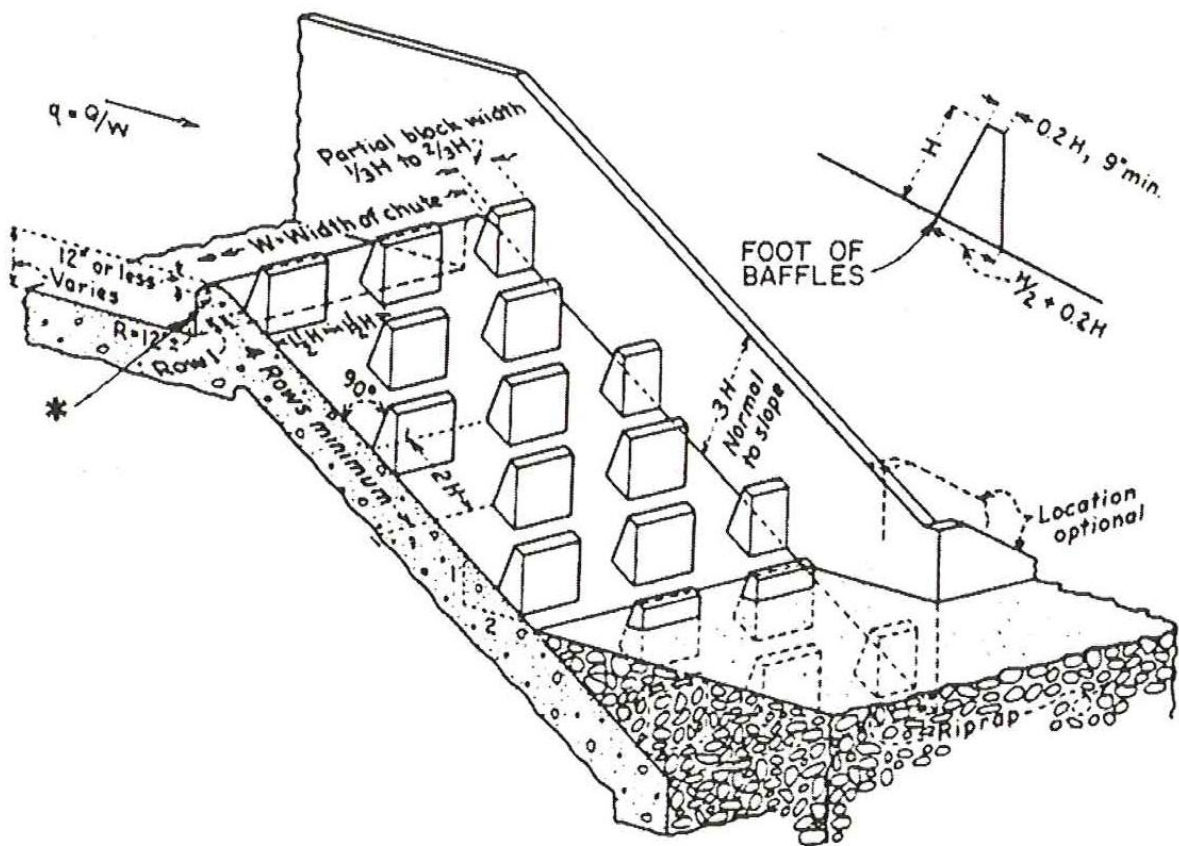
Ref: U.S. Bureau of Reclamation



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

BUREAU OF RECLAMATION
TYPE IV BASIN

FIGURE 12



- * SILL IS REQUIRED WHERE ENTRANCE VELOCITY CANNOT BE CONTROLLED BY THE UPSTREAM CHANNEL CON-
STRICTION, BUT FOR GRASS-LINED
CHANNEL THE SILL ELEVATION NEEDS
TO BE THE SAME AS THE CHANNEL,
OTHERWISE UPSTREAM SILTATION WILL
OCCUR.

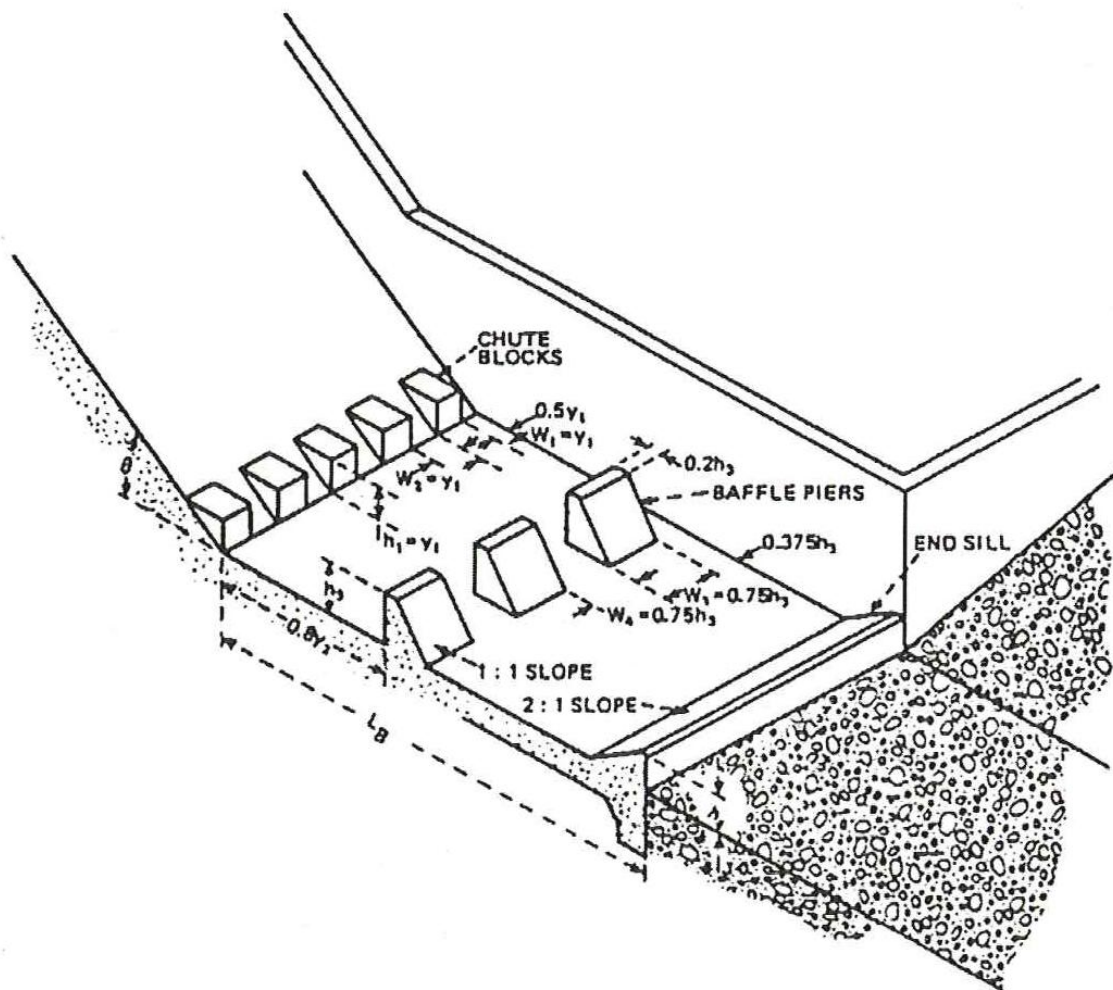
Ref: U.S. Bureau of Reclamation



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STORMWATER MANAGEMENT
CRITERIA

BUREAU OF RECLAMATION
TYPE IX BASIN

FIGURE 13



Ref: U.S. Bureau of Reclamation



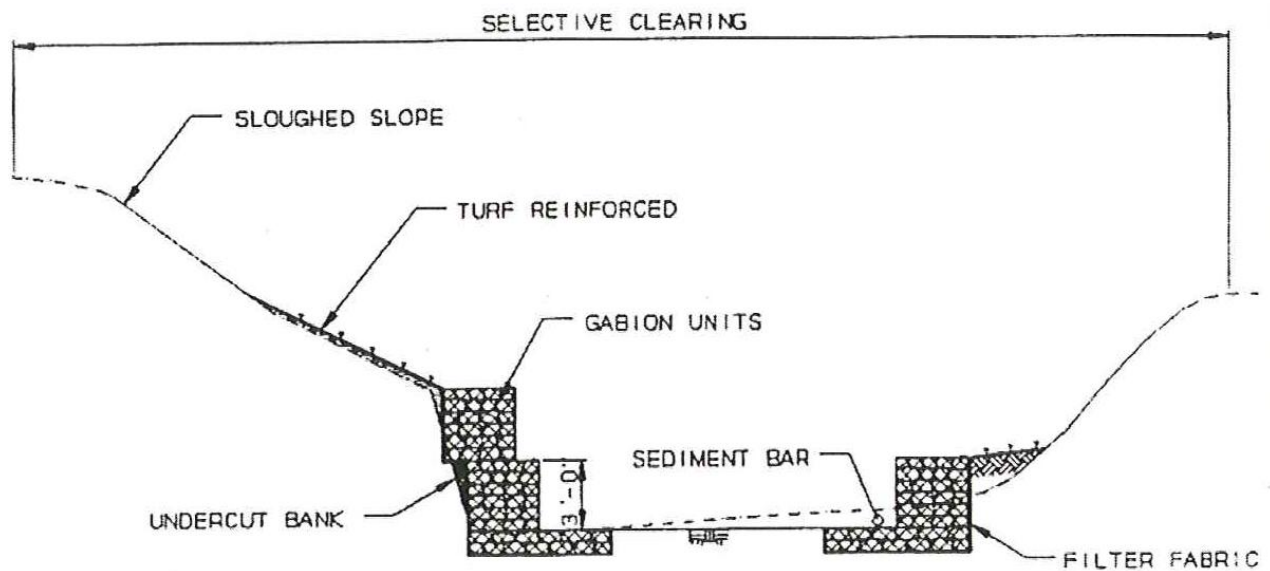
CARL JUNCTION, MISSOURI
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CRITERIA

BUREAU OF RECLAMATION
TYPE III BASIN

FIGURE 14

NOTES:

1. SELECTIVE CLEARING TO REMOVE DEADFALL, TREES WITH UNDERCUT ROOTS, AND BRUSH. SOUND TREES MAY REMAIN.
2. HEIGHT OF GABION STRUCTURE VARIES. CONSTRUCT TO APPX. EQUAL HEIGHT OF EXISTING VERTICAL BANK FACE.



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CRITERIA

BANK STABILIZAION
FOR STREAM OR CHANNEL

FIGURE 15

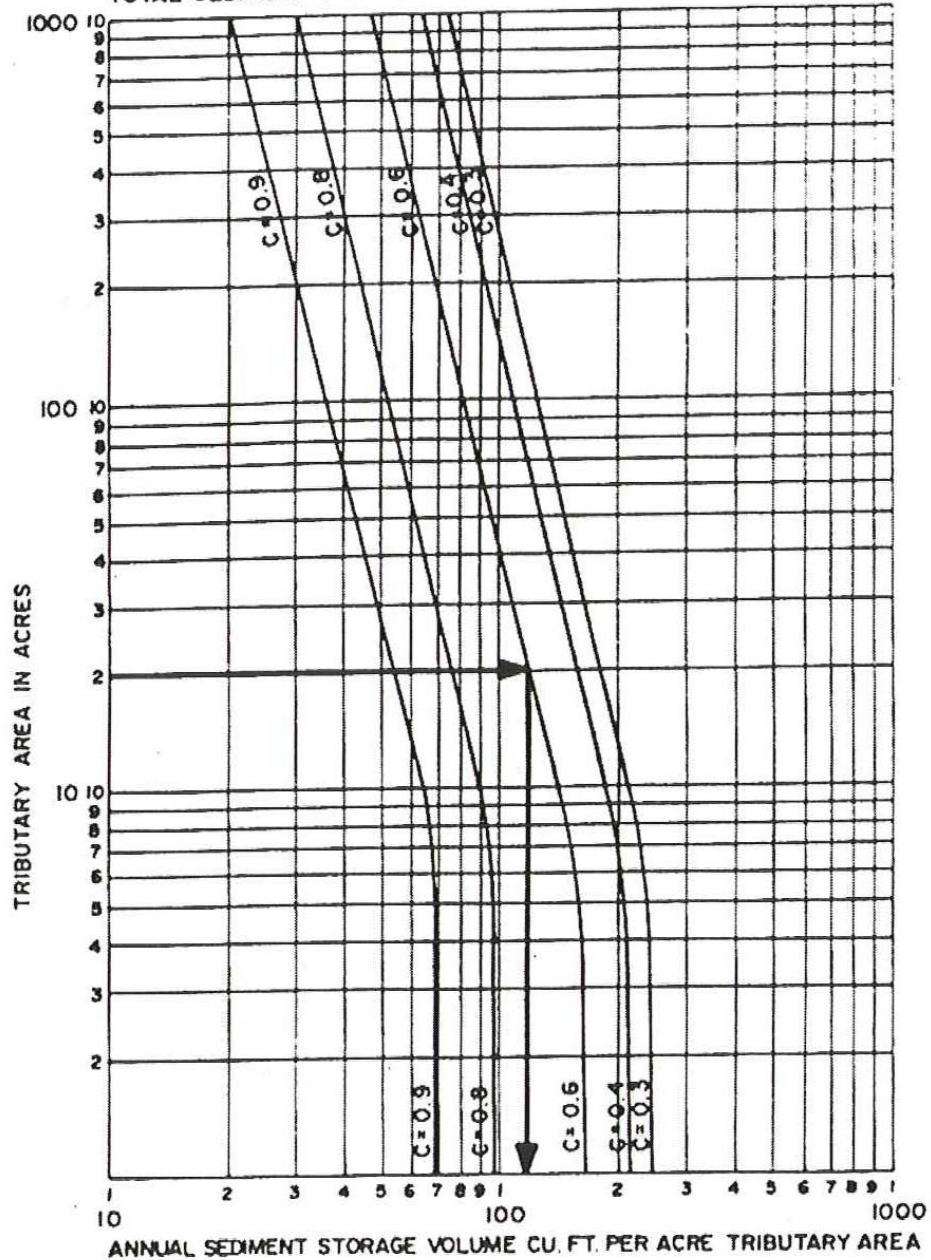
EXAMPLE:

TRIBUTARY AREA = 20 ACRES

RATIONAL METHOD RUNOFF COEFFICIENT "C" = 0.6

SEDIMENT STORAGE = 120 CU. FT. PER ACRE PER YEAR

TOTAL SEDIMENT STORAGE = 120 X 20 = 2400 CU. FT. PER YEAR.



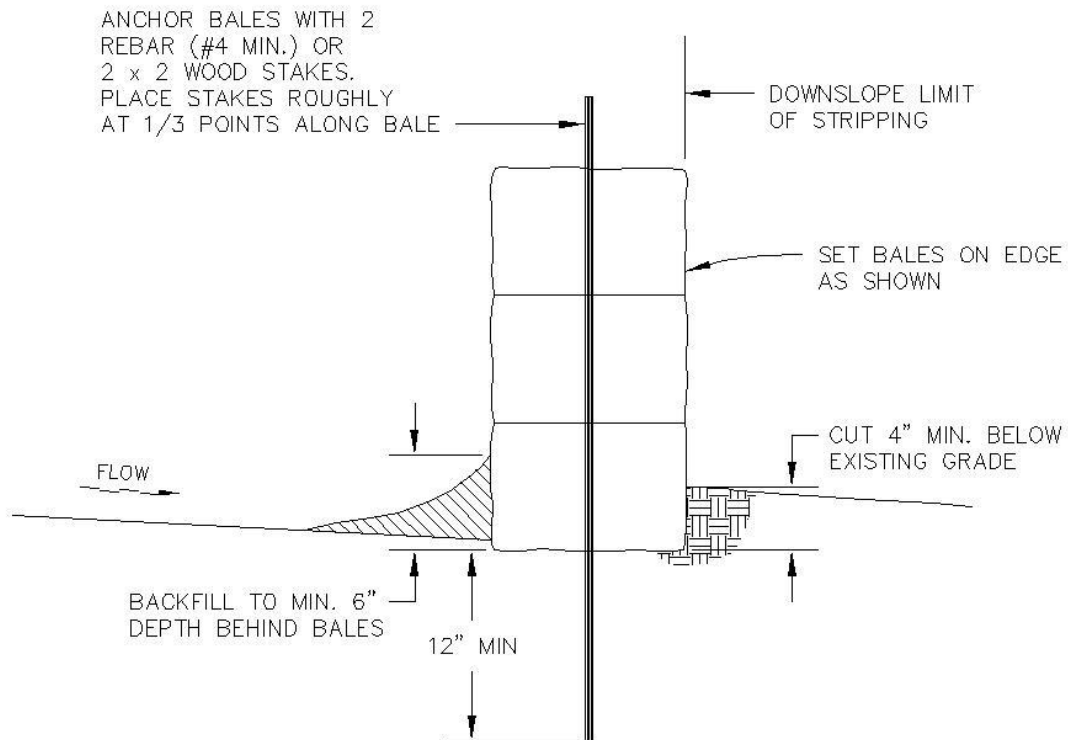
Ref: APWA (3/90)



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CRITERIA

ESTIMATED ANNUAL
SEDIMENT ACCUMULATION

FIGURE 16



NOTES:

1. PLACE HAY BALE DIKE AT DOWNSLOPE LIMIT OF AREA TO BE GRADED.
2. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
3. BALES SHALL BE PLACED ALONG A LEVEL CONTOUR WITH AN ALLOWANCE OF ± 4 INCHES.
4. SEDIMENT TRAPPED SHALL BE DISPOSED IN AN APPROVED LOCATION IN A MANNER WHICH WILL NOT CONTRIBUTE ADDITIONAL SILTATION.
5. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF FOUR INCHES.
6. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
7. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED BY CONTRACTOR.
8. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
9. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
10. AT EACH END OF DIKE, TURN DIKE UPSLOPE AND EXTEND UNTIL GROUND SURFACE RISES 18 INCHES.

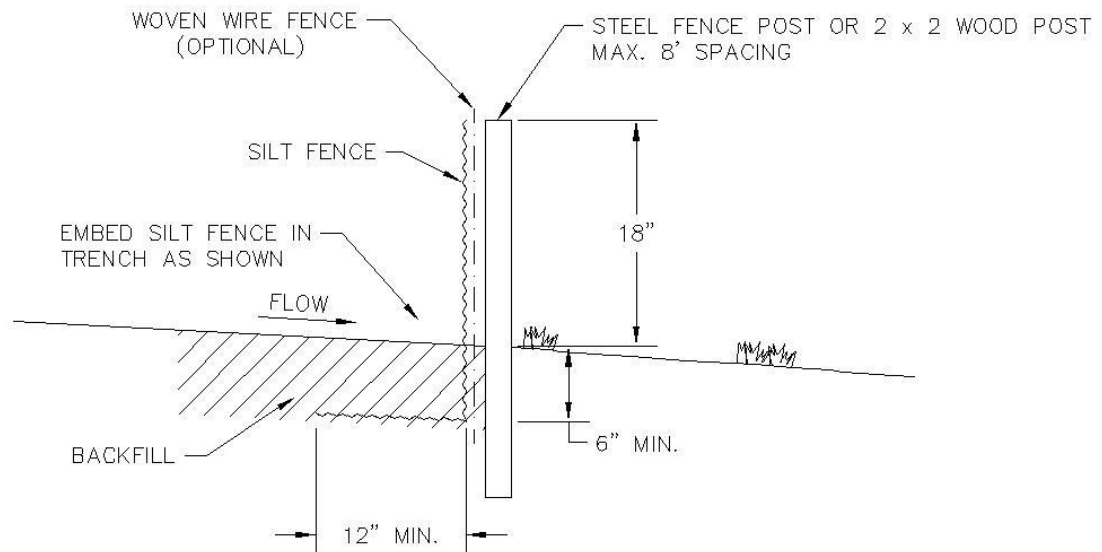
REFERENCE: Adapted from City of Austin & City of Tulsa Erosion and Sedimentation Control Manuals



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STORMWATER MANAGEMENT
CRITERIA

HAY BALE DIKE

FIGURE 17



NOTES:

1. PLACE SILT FENCE AT DOWNSLOPE LIMIT OF AREA TO BE GRADED.
2. SILT FENCE SHALL BE PLACED ALONG A LEVEL CONTOUR WITH AN ALLOWANCE OF ± 4 INCHES.
3. SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE DISPOSED OF IN AN APPROVED SITE IN A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POSTS.
5. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
8. AT EACH END OF SILT FENCE, TURN FENCE UPSLOPE AND EXTEND UNTIL GROUND SURFACE RISES 18 INCHES.

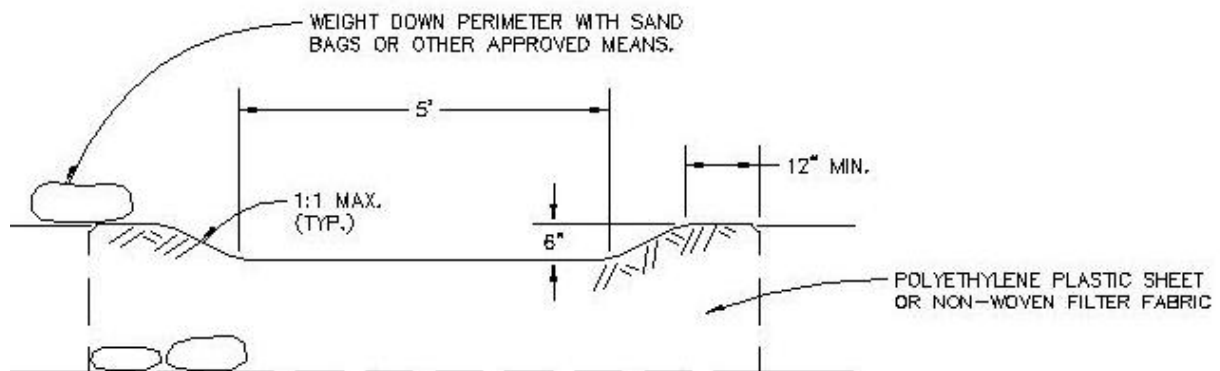
REFERENCE: Adapted from City of Austin & City of Tulsa Erosion and Sedimentation Control Manuals



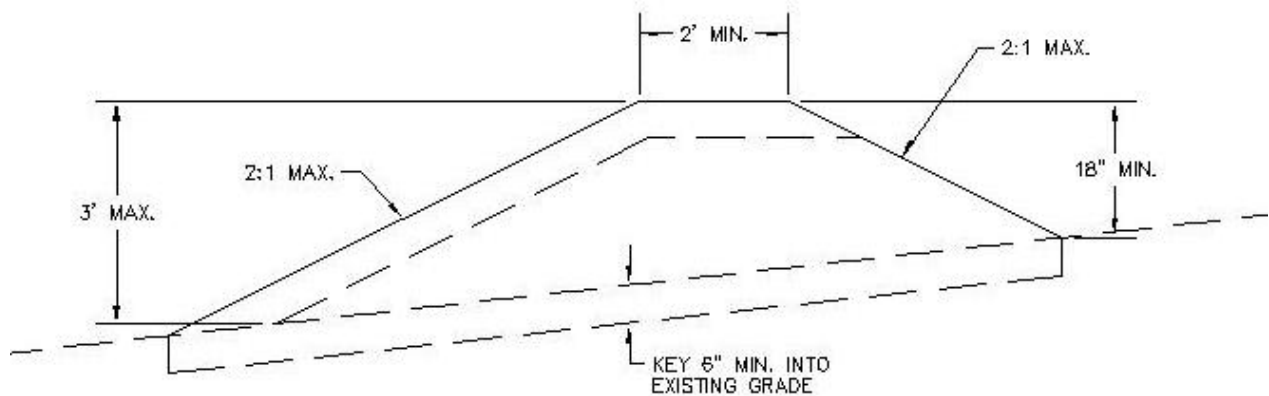
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CRITERIA

SILT FENCE

FIGURE 18



OVERFLOW AREA



NOTES:

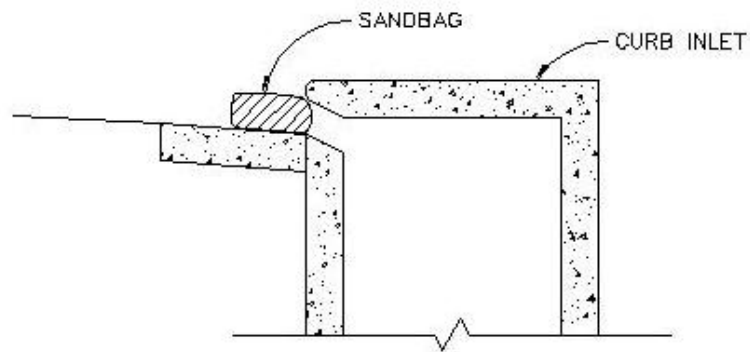
1. SOIL IN BERM SHALL BE FIRMLY COMPACTED.
2. AT EACH END OF BERM, TURN BERM UPSLOPE AND EXTEND UNTIL GROUND SURFACE RISES TO TOP OF BERM ELEVATION.
3. PROVIDE OVERFLOW AREAS AT 200 FT. MAX. INTERVALS.



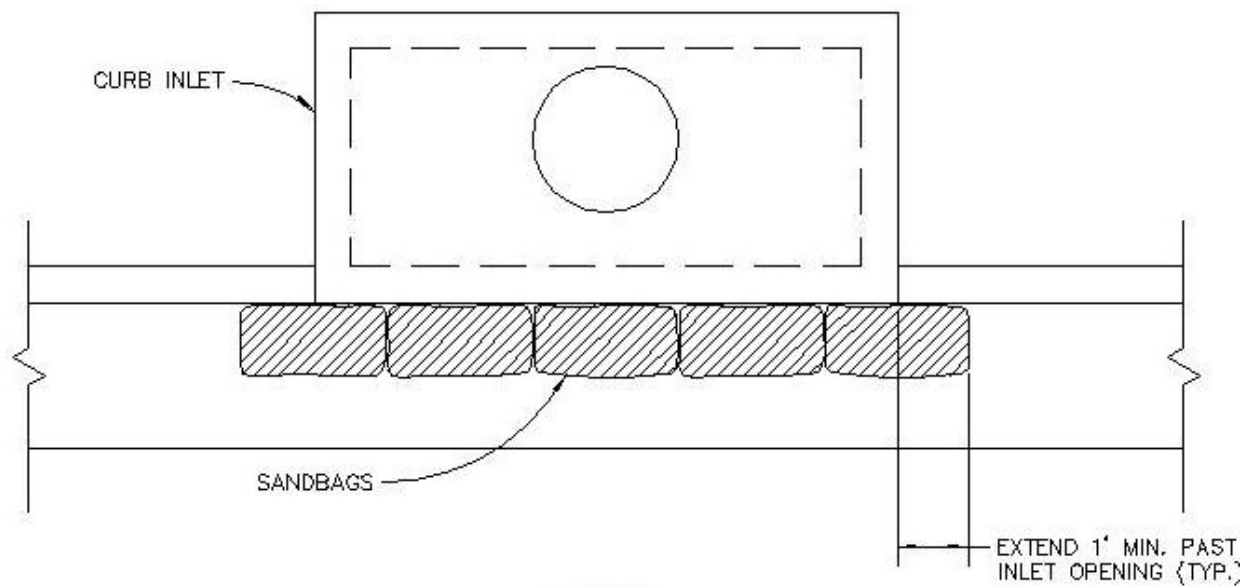
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STORMWATER MANAGEMENT
CRITERIA

TEMPORARY SILT
CONTAINMENT BERM

FIGURE 19



CROSS-SECTION



PLAN

NOTES:

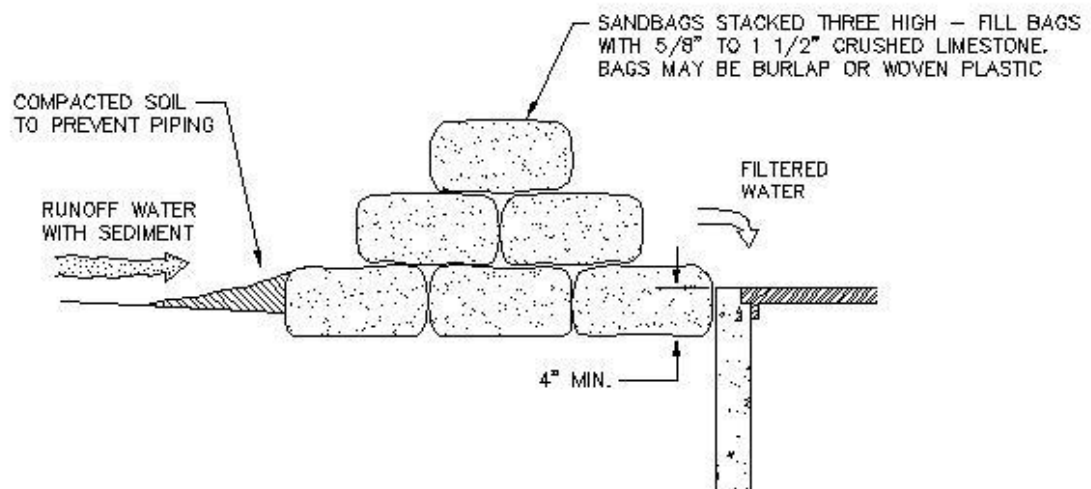
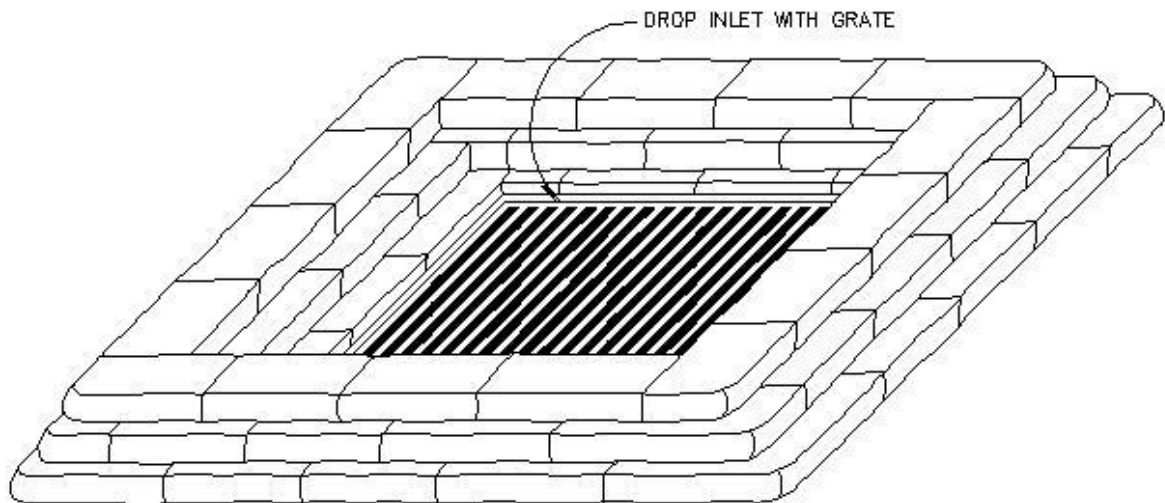
1. FILL BAGS WITH 5/8" CRUSHED LIMESTONE.
2. BAGS SHALL BE BURLAP OR BIODEGRADABLE PLASTIC.
3. BAGS SHALL BE INSPECTED AND REPLACED AS NEEDED.



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CRITERIA

SAND BAG SEDIMENT TRAP
FOR CURB INLETS

FIGURE 20



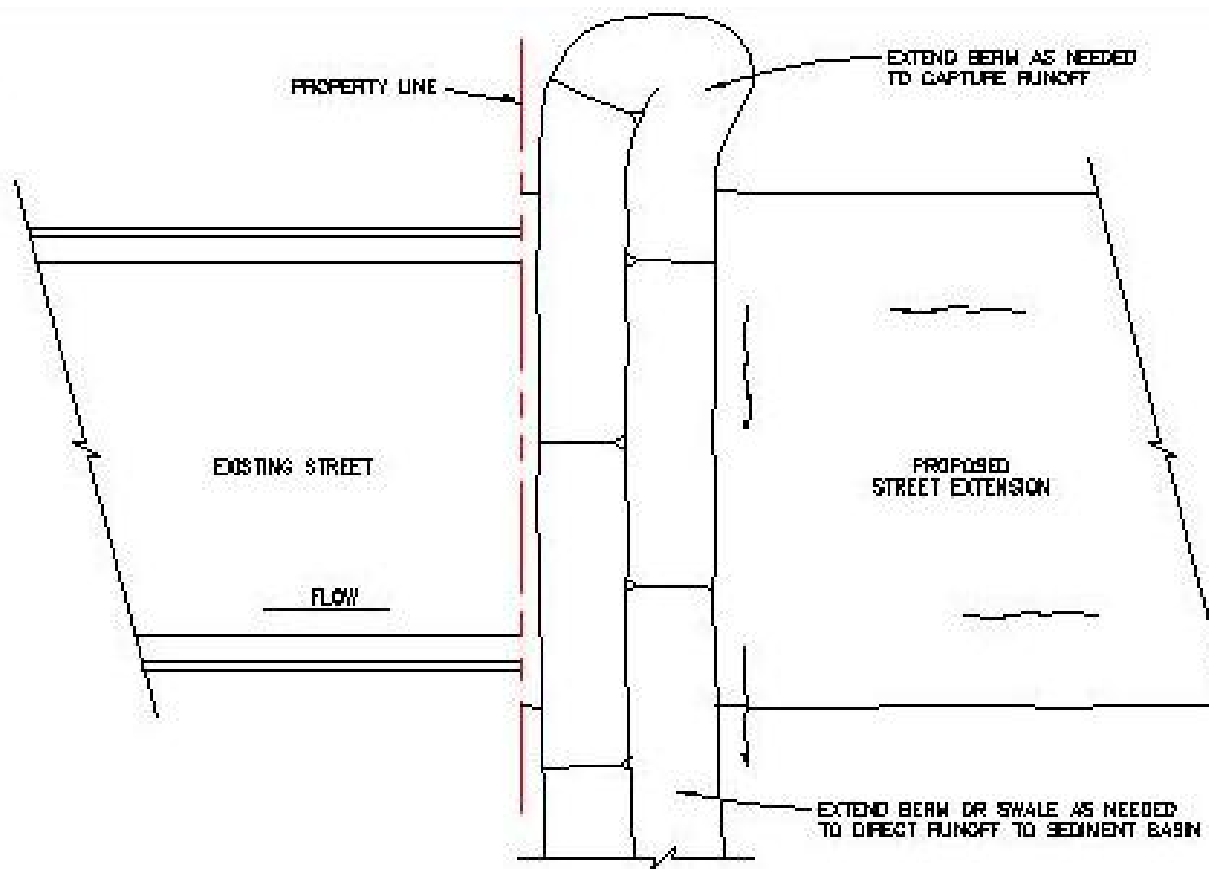
DROP INLET SEDIMENT FILTER



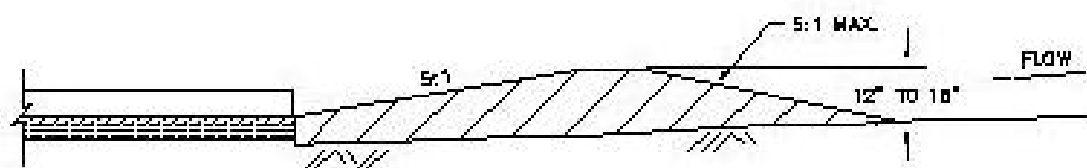
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AREA INLET
PROTECTION

FIGURE 21



PLAN



CROSS-SECTION

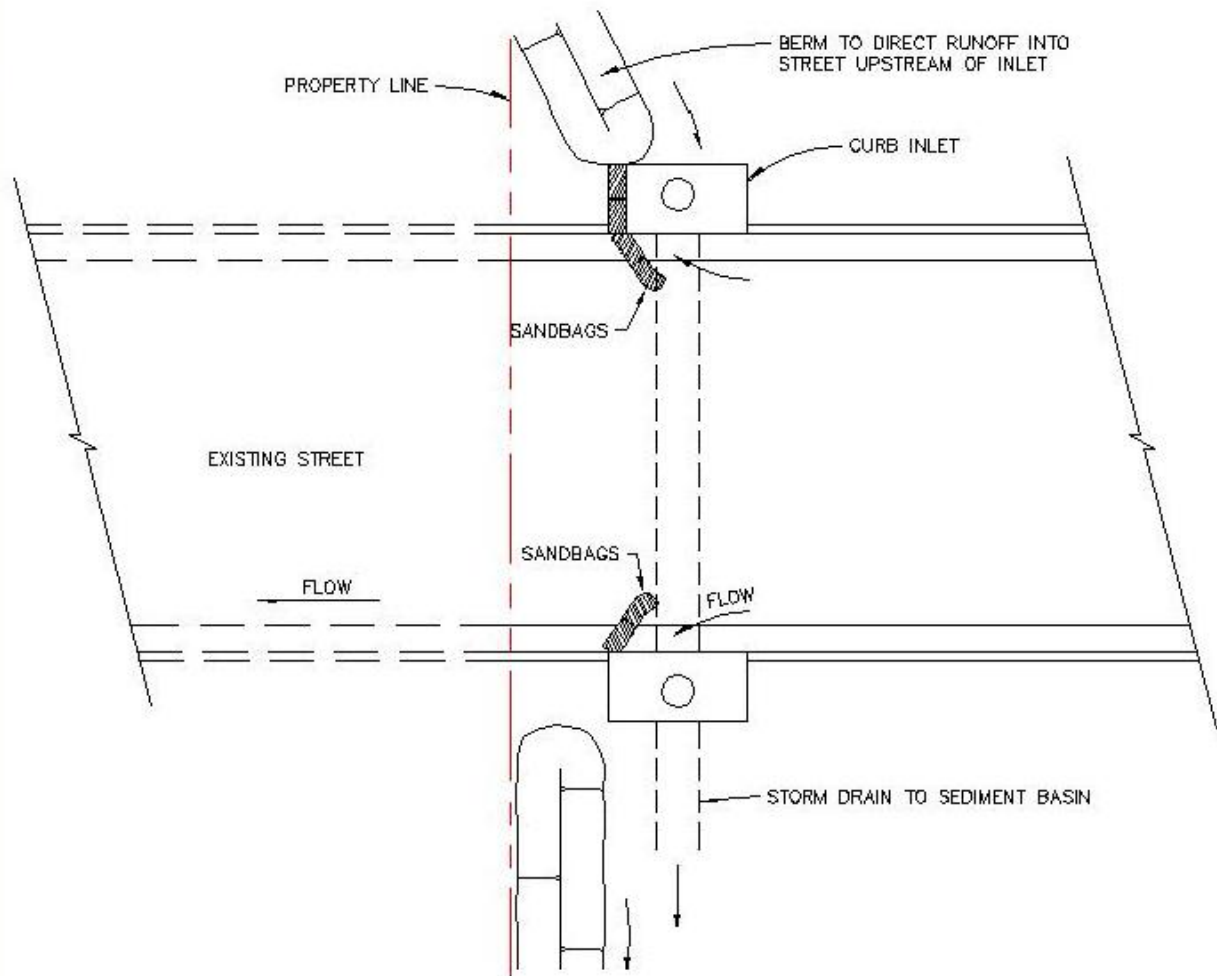
CASE 1
AFTER INITIAL EXCAVATION
OF SUBGRADE



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CRITERIA

DIVERSION OF RUNOFF
CURBED STREET

FIGURE 22



NOTE: FILL SANDBAGS WITH CHAT OR LIMESTONE SAND

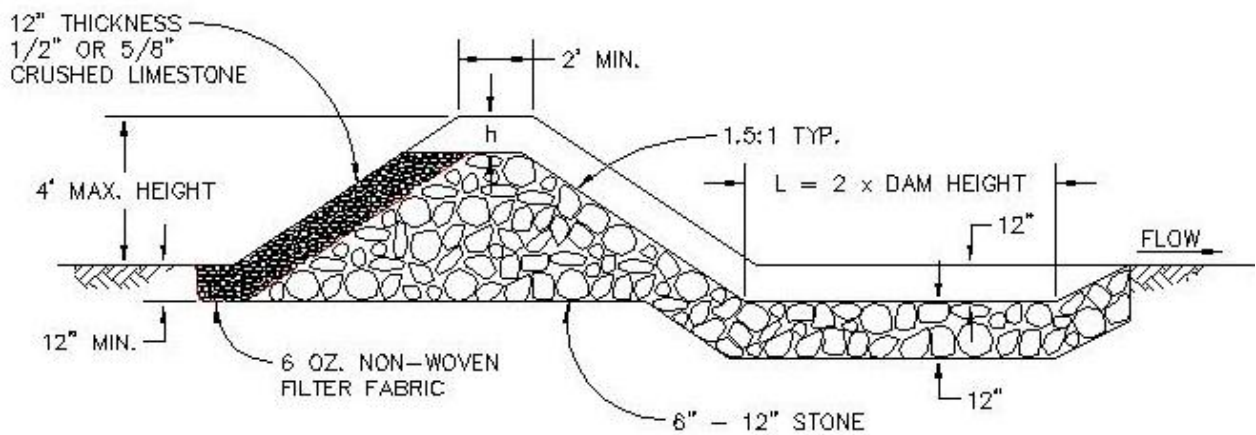
CASE 2
AFTER PAVEMENT AND
INLETS COMPLETED



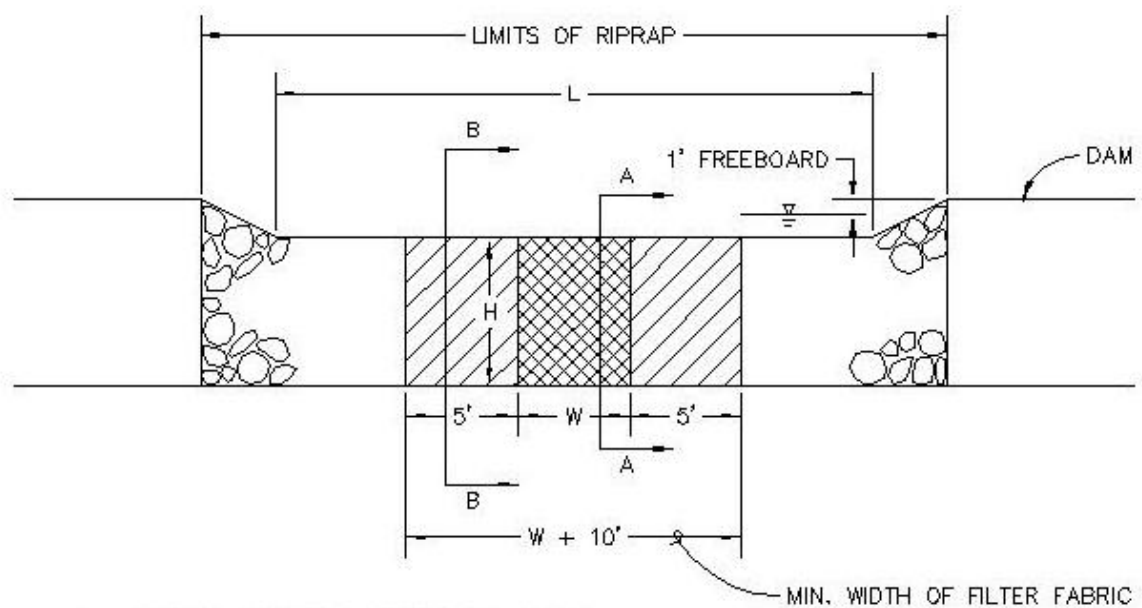
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CRITERIA

DIVERSION OF RUNOFF
CURBED STREET

FIGURE 23



SECTION A - A (THRU GRAVEL FILTER)



L = LENGTH REQUIRED TO PASS Q_{10} WHILE
MAINTAINING 1 FT. OF FREEBOARD

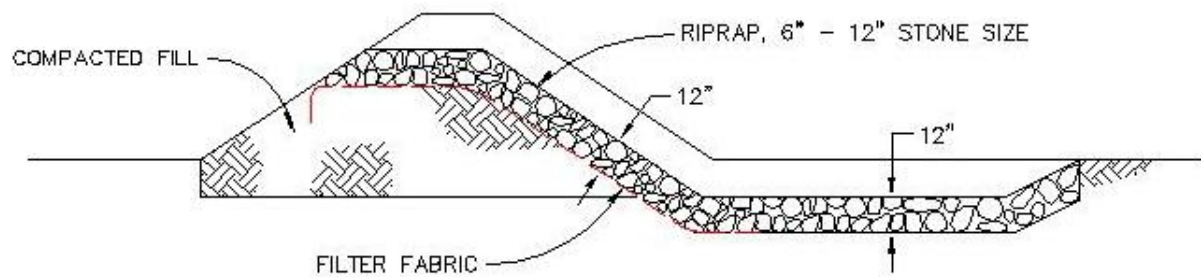
W = WIDTH OF ROCK FILTER AREA



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CRITERIA

GRAVEL FILTER DAM

FIGURE 24



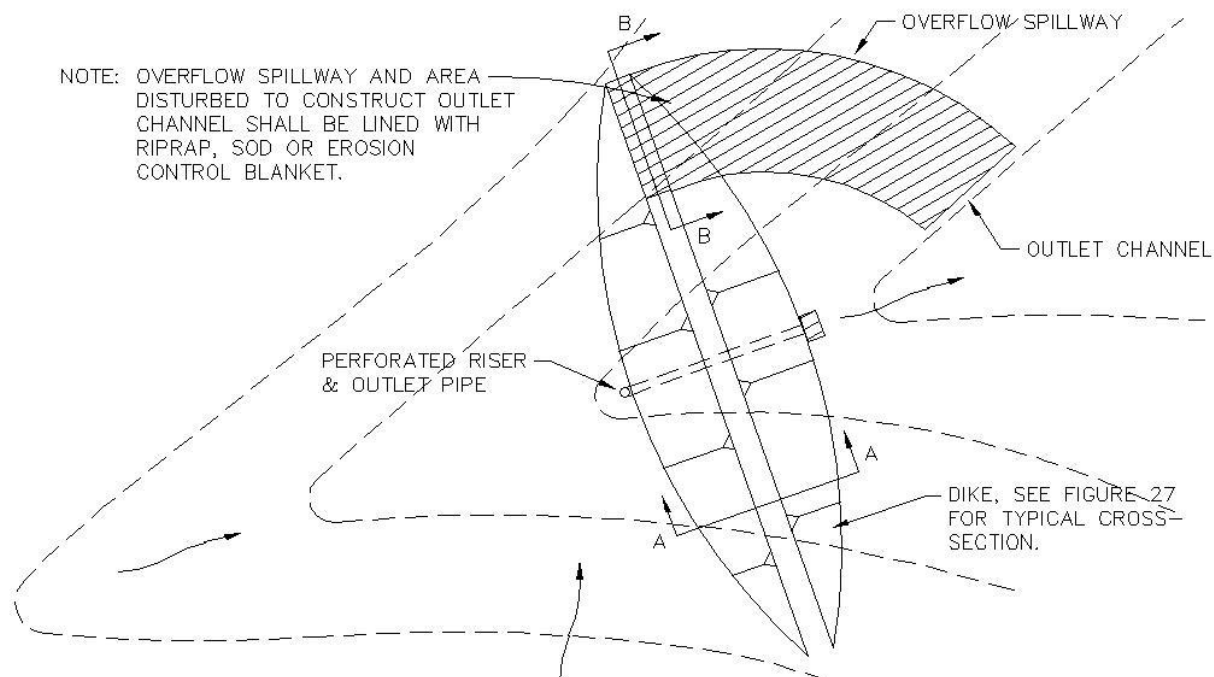
SECTION B – B
(FIGURE 24)



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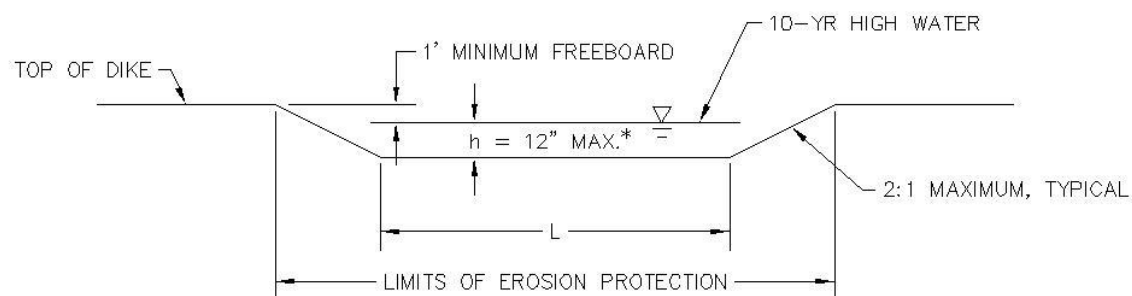
RIPRAP SPILLWAY
GRAVEL FILTER DAM

FIGURE 25



TYPICAL COMPONENTS OF TEMPORARY SEDIMENT BASIN PLAN

(PERFORATED RISER PIPE AND OVERFLOW SPILLWAY SHOWN. GRAVEL FILTER DAM AND RIPRAP OVERFLOW SPILLWAY AS SHOWN IN FIGURES 24 AND 25 MAY ALSO BE USED.)



* $h = 6''$ MAX. IF SOD LINING USED

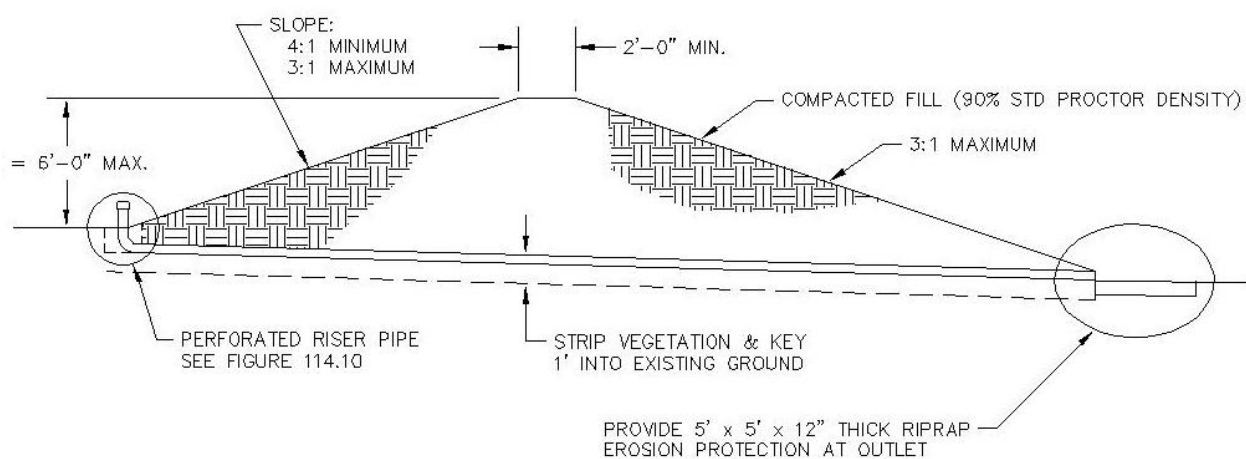
SECTION B - B TYPICAL OVERFLOW SPILLWAY CROSS-SECTION



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CRITERIA

TEMPORARY SEDIMENT
BASIN

FIGURE 26



SECTION A — A
(FIGURE 26)

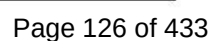
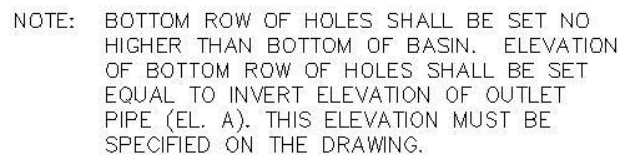


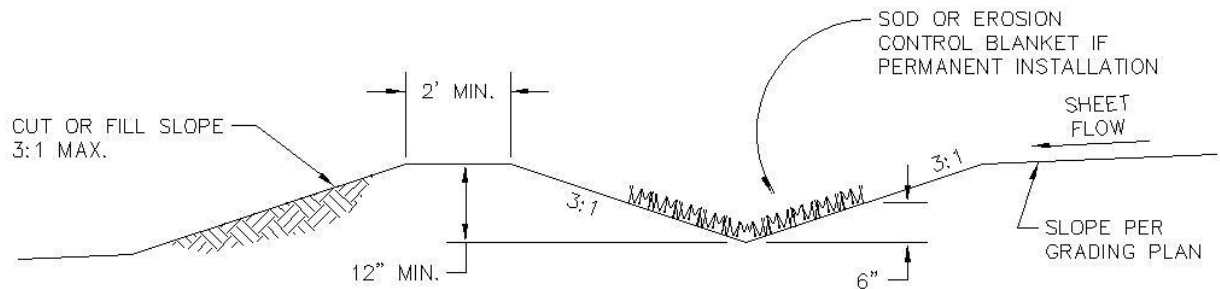
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TYPICAL SECTION SEDIMENT
BASIN BERM & OUTLET

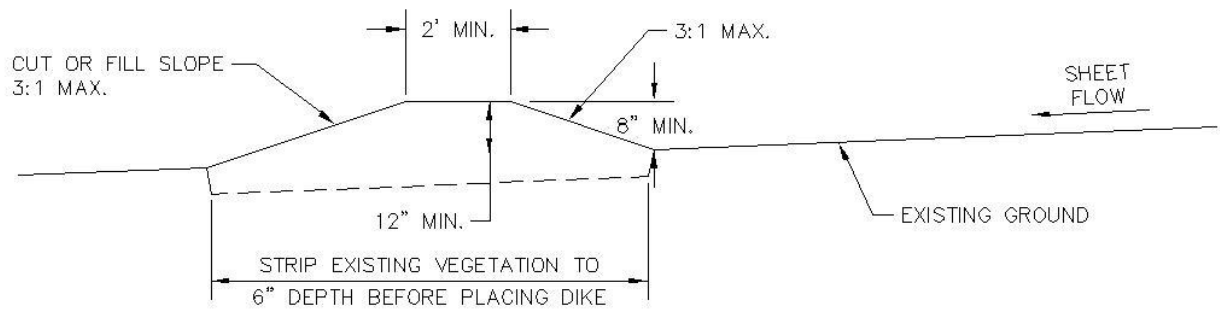
FIGURE 27

d = HOLE DIAMETER





SWALE



DIKE

NOTES:

1. DIKE SHALL BE COMPACTED TO DENSITY EQUAL TO THAT SPECIFIED FOR ADJOINING AREA (90% STANDARD PROCTOR DENSITY, MINIMUM).
2. MINIMUM 1% GRADE MUST BE PROVIDED FOR SWALE OR ALONG UPSLOPE SIDE OF DIKE FOR PROPER DRAINAGE.

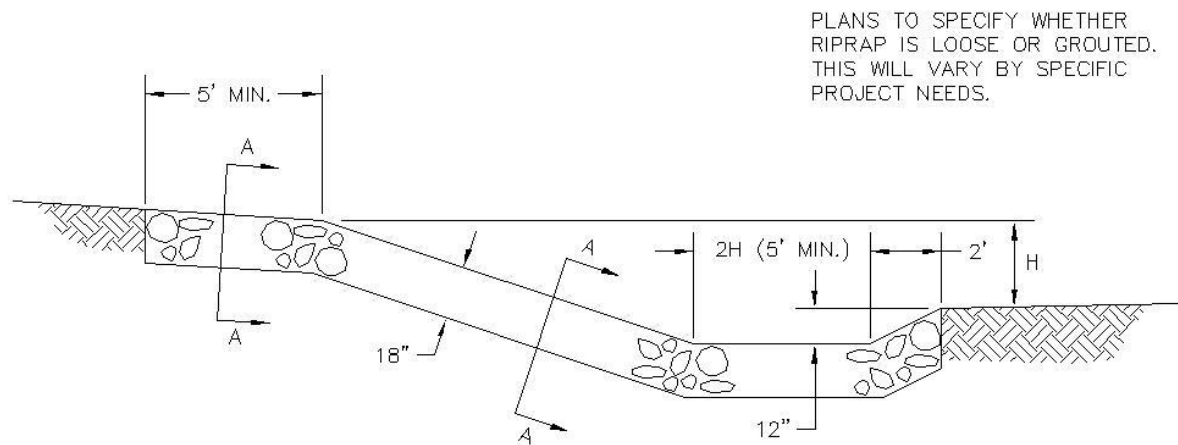
REFERENCE: Adapted from City of Austin & City of Tulsa Erosion and Sedimentation Control Manuals



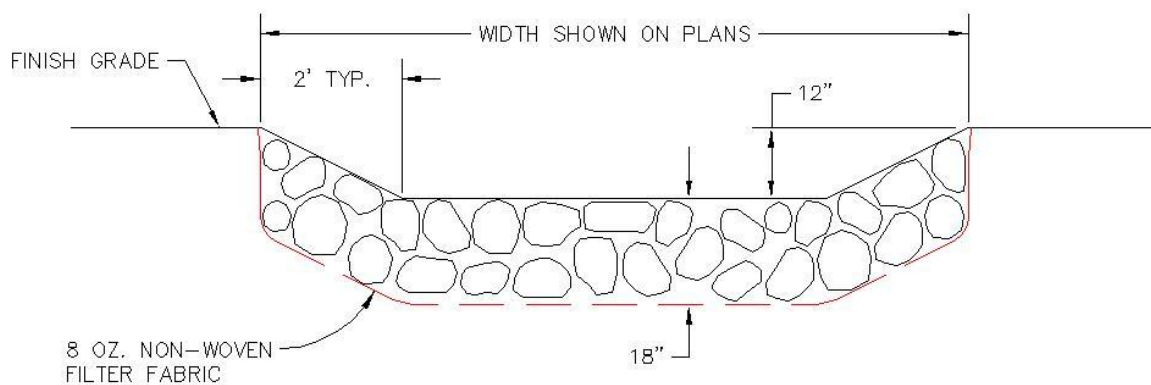
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DIVERSION DIKES AND
SWALES

FIGURE 29



TYPICAL SECTION



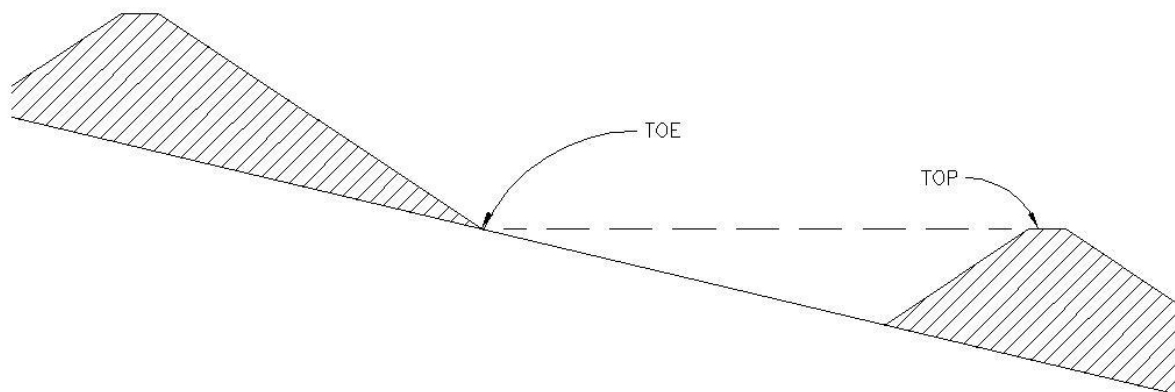
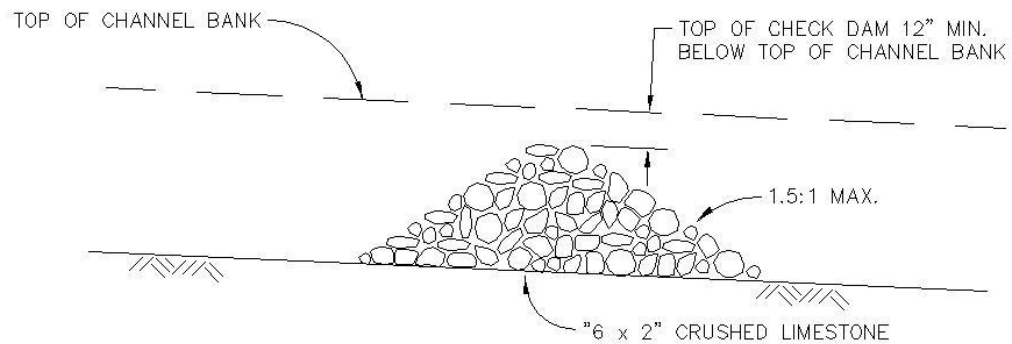
SECTION A - A



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RIPRAP CHUTE
CROSS SECTION

FIGURE 30



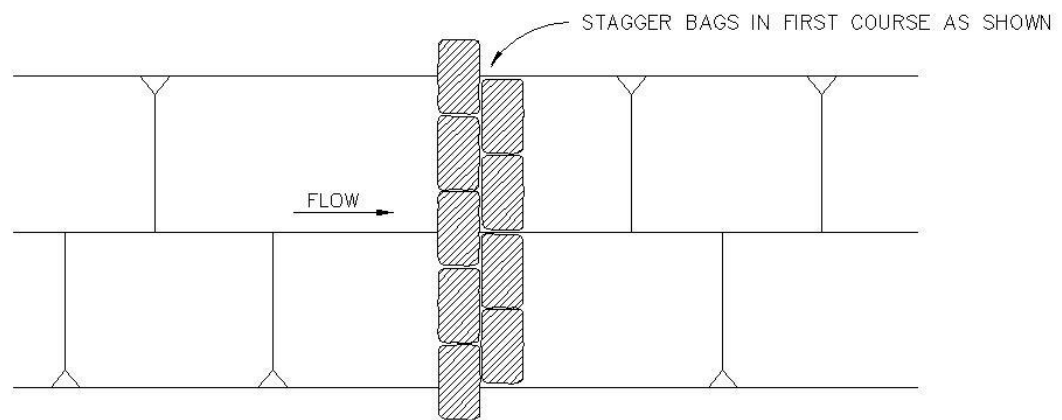
TYPICAL CHECK DAM SPACING



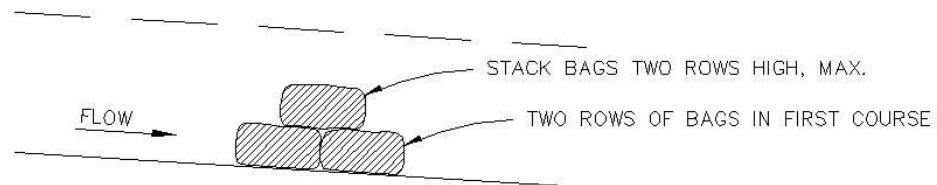
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CRITERIA

ROCK CHECK DAM

FIGURE 31



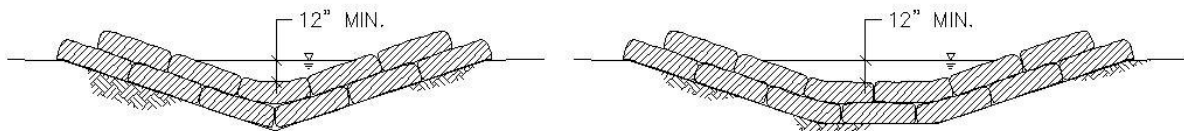
PLAN



PROFILE

NOTES:

FILL BAGS WITH 5/8" TO 1 1/2" CRUSHED LIMESTONE.
BAGS MAY BE BURLAP OR WOVEN PLASTIC.
SPACE CHECK DAMS AS SHOWN IN FIG. 31 OR AS
SPECIFIED ON SEDIMENT & EROSION CONTROL PLAN.



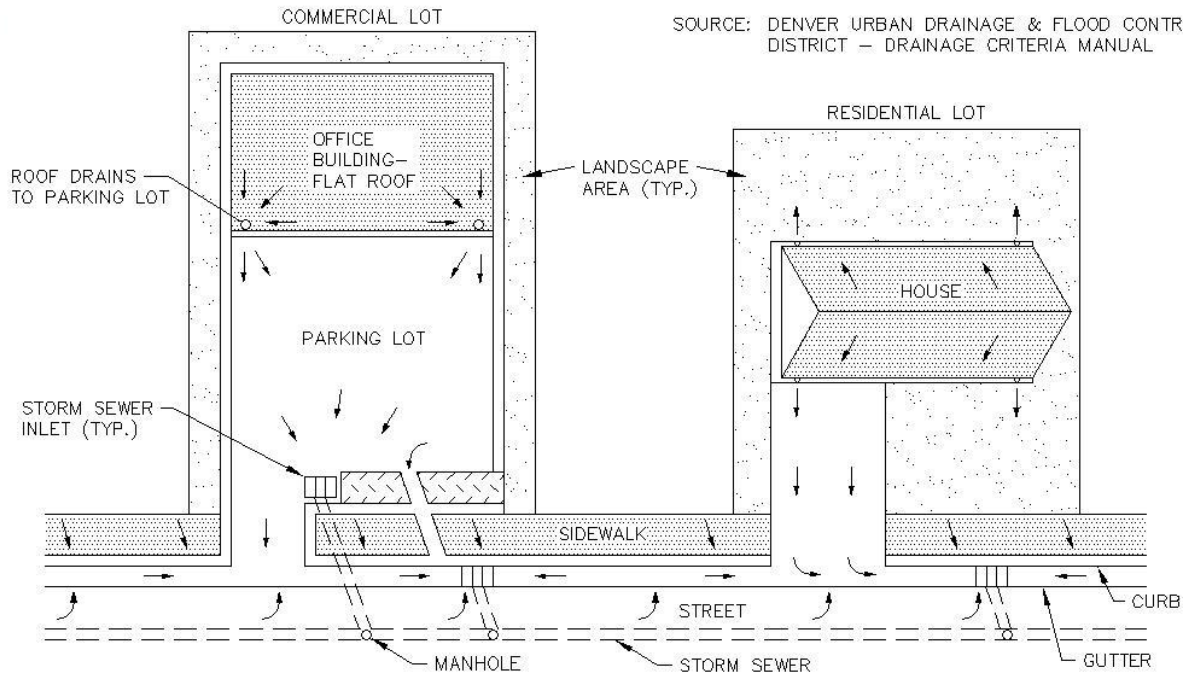
TYPICAL CROSS-SECTIONS



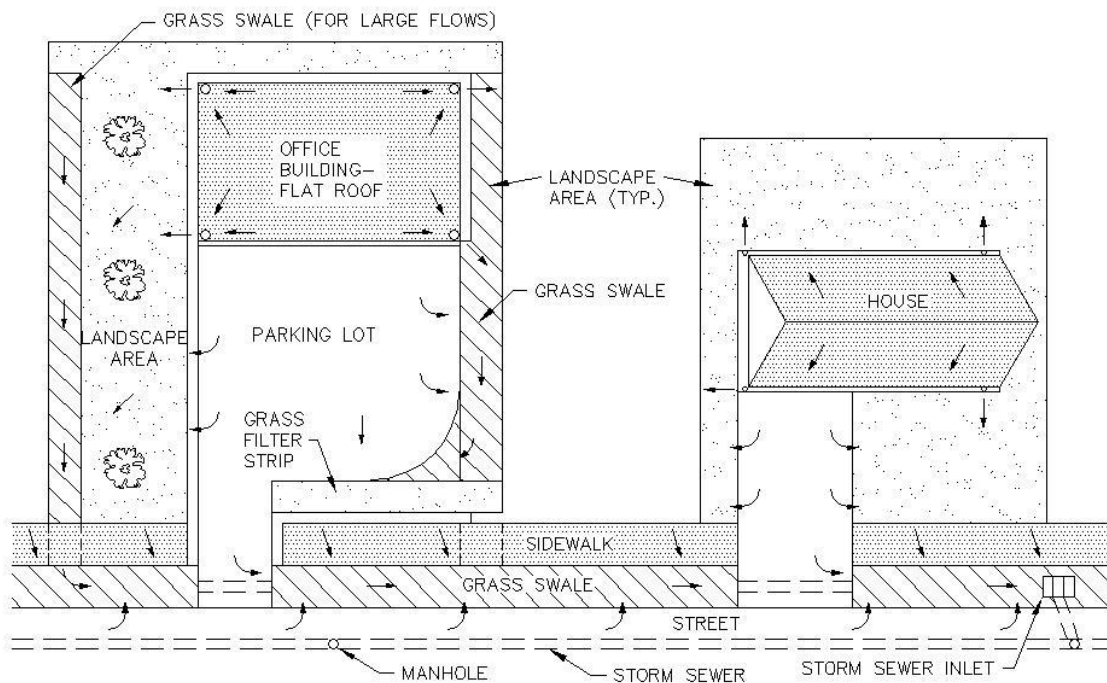
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CRITERIA

SANDBAG CHECK DAM

FIGURE 32



TRADITIONAL SITE & STREET DRAINAGE DESIGN



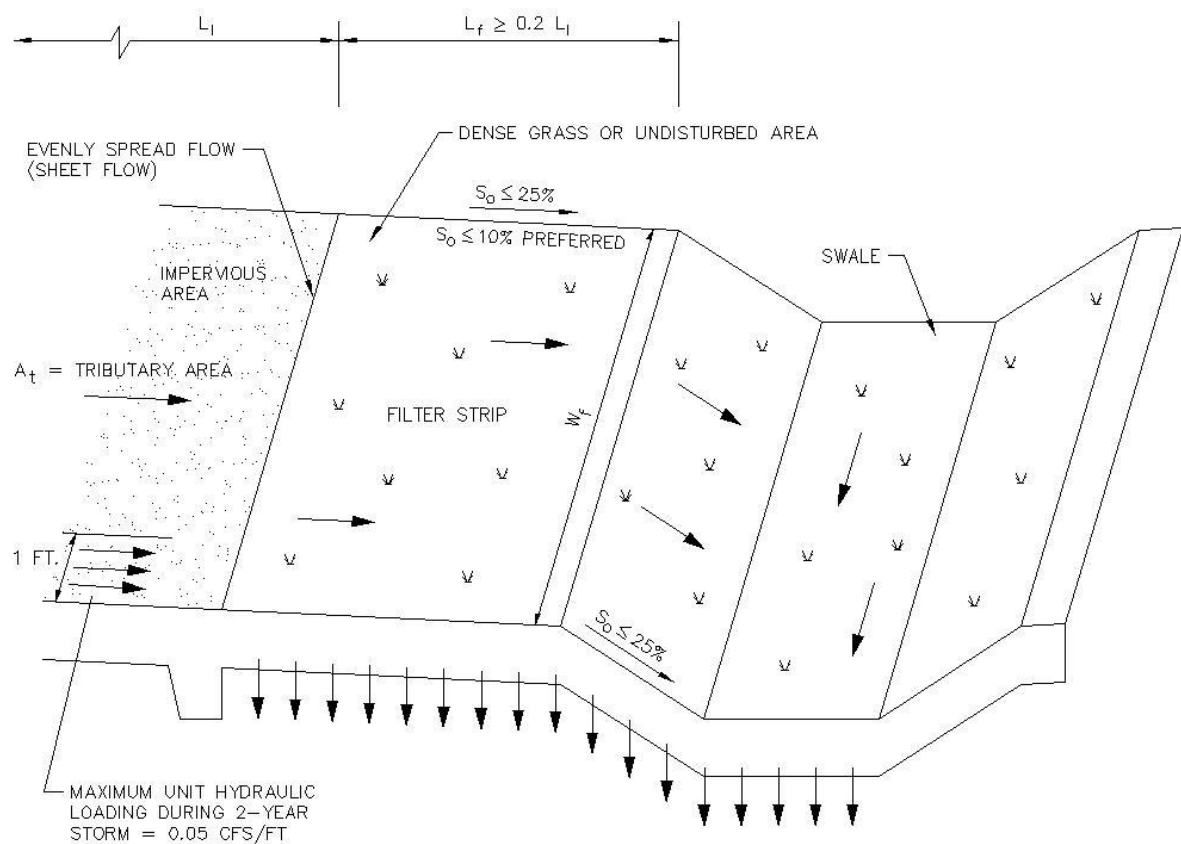
MINIMIZING DIRECTLY CONNECTED IMPERVIOUS AREAS



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CRITERIA

EXAMPLE OF MINIMIZING
DIRECTLY CONNECTED
IMPERVIOUS AREA

FIGURE 33



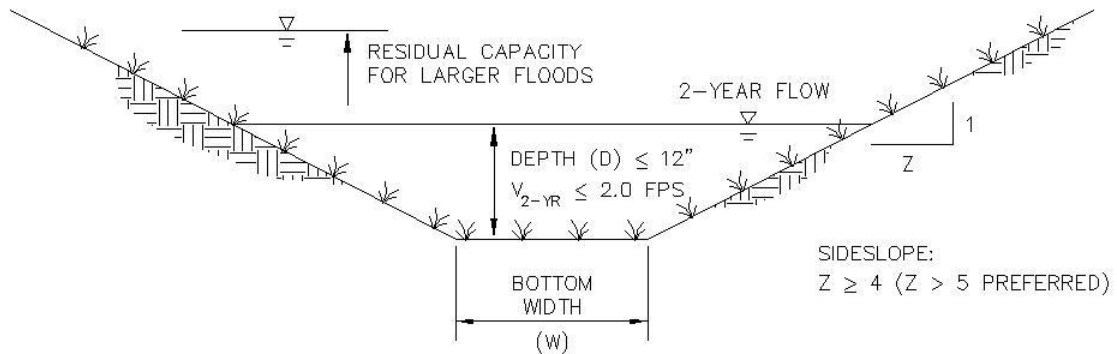
ADAPTED FROM DENVER URBAN DRAINAGE & FLOOD
CONTROL DISTRICT — DRAINAGE CRITERIA MANUAL



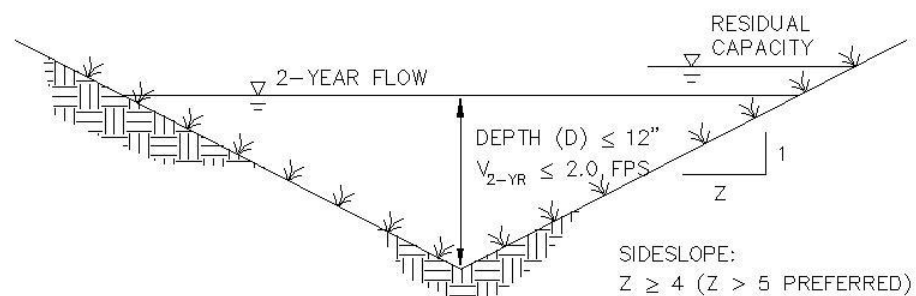
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STORMWATER MANAGEMENT
CRITERIA

VEGETATIVE FILTER STRIP
WATER QUALITY BMP

FIGURE 34



TRAPEZOIDAL GRASS-LINED SWALE SECTION



TRIANGULAR GRASS-LINED SWALE SECTION

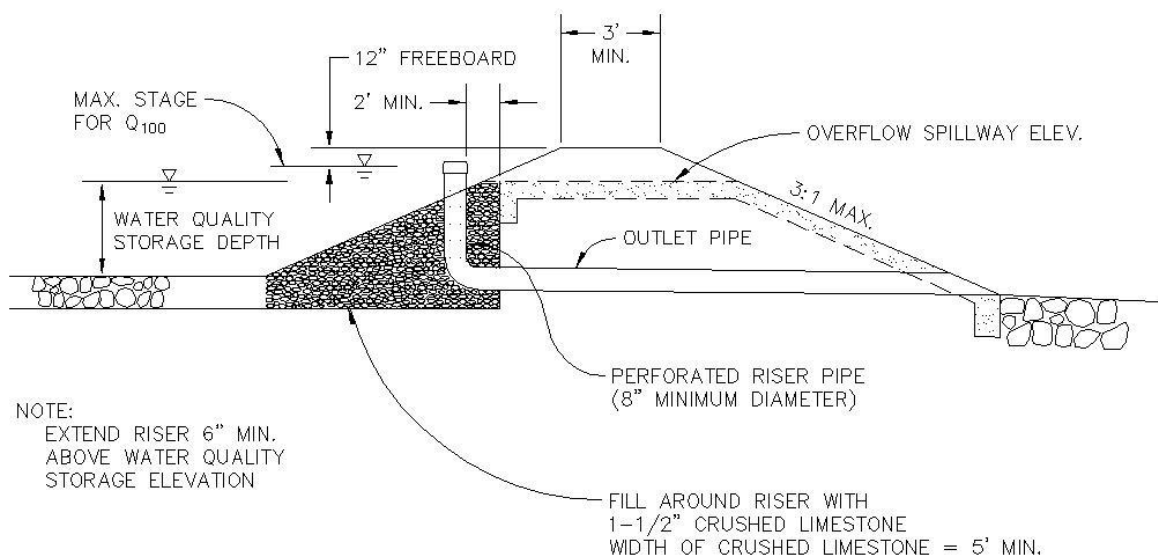
ADAPTED FROM DENVER URBAN DRAINAGE & FLOOD
CONTROL DISTRICT — DRAINAGE CRITERIA MANUAL



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STORMWATER MANAGEMENT
CRITERIA

GRASS SWALE
WATER QUALITY BMP

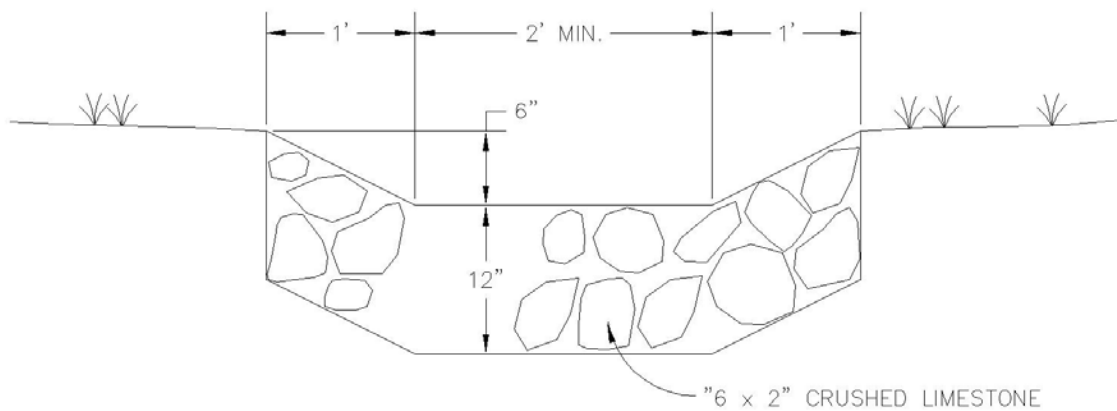
FIGURE 35



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

EXTENDED DRY DETENTION
WATER QUALITY BMP

FIGURE 36



ROCK TRICKLE CHANNEL FOR
EXTENDED DRY DETENTION BASINS
TYPICAL CROSS SECTION
WATER QUALITY BMP

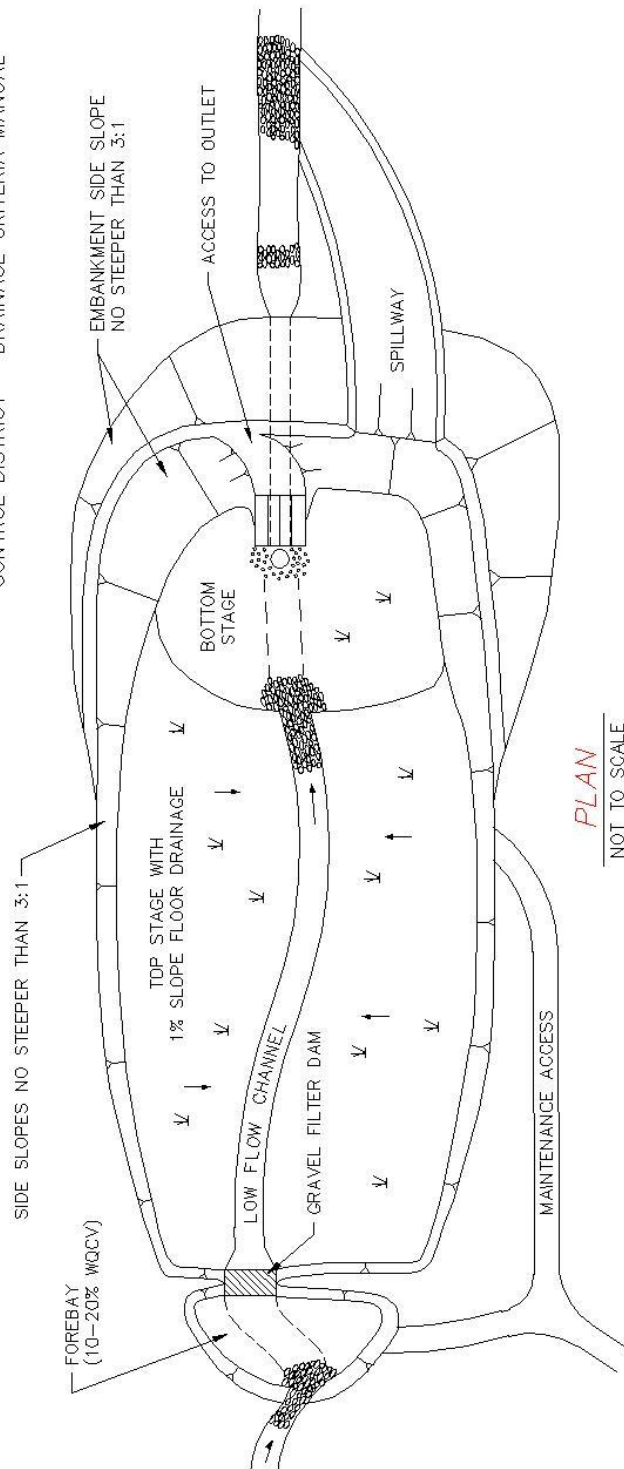


CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

TRICKLE CHANNEL
WATER QUALITY BMP

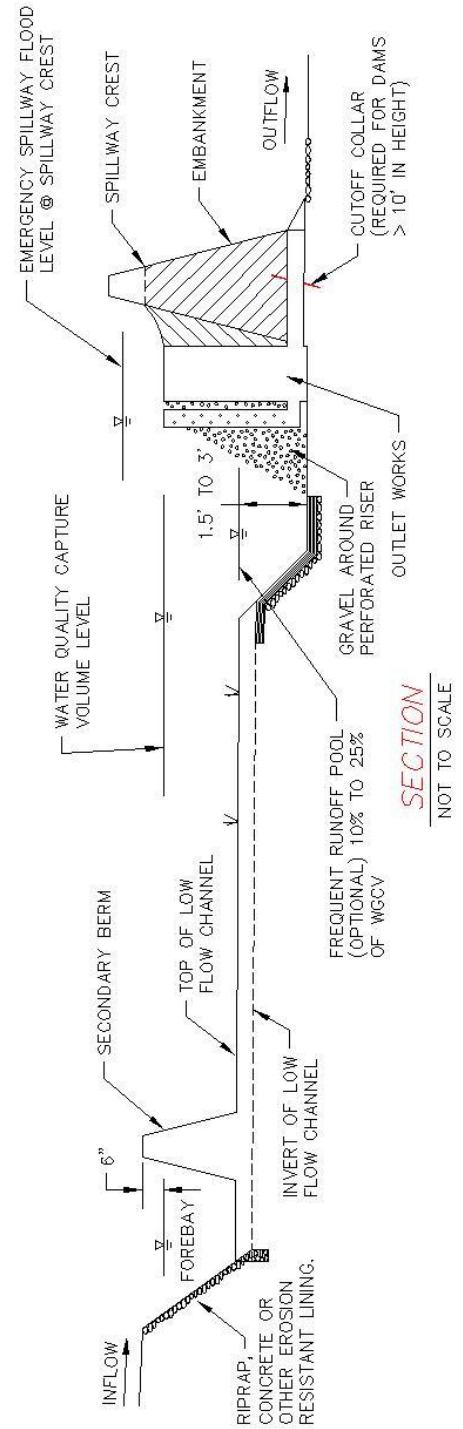
FIGURE 37

ADAPTED FROM DENVER URBAN DRAINAGE & FLOOD
CONTROL DISTRICT - DRAINAGE CRITERIA MANUAL



PLAN

NOT TO SCALE



SECTION

NOT TO SCALE



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

EXTENDED DRY DETENTION
BASIN TYPICAL DETAILS

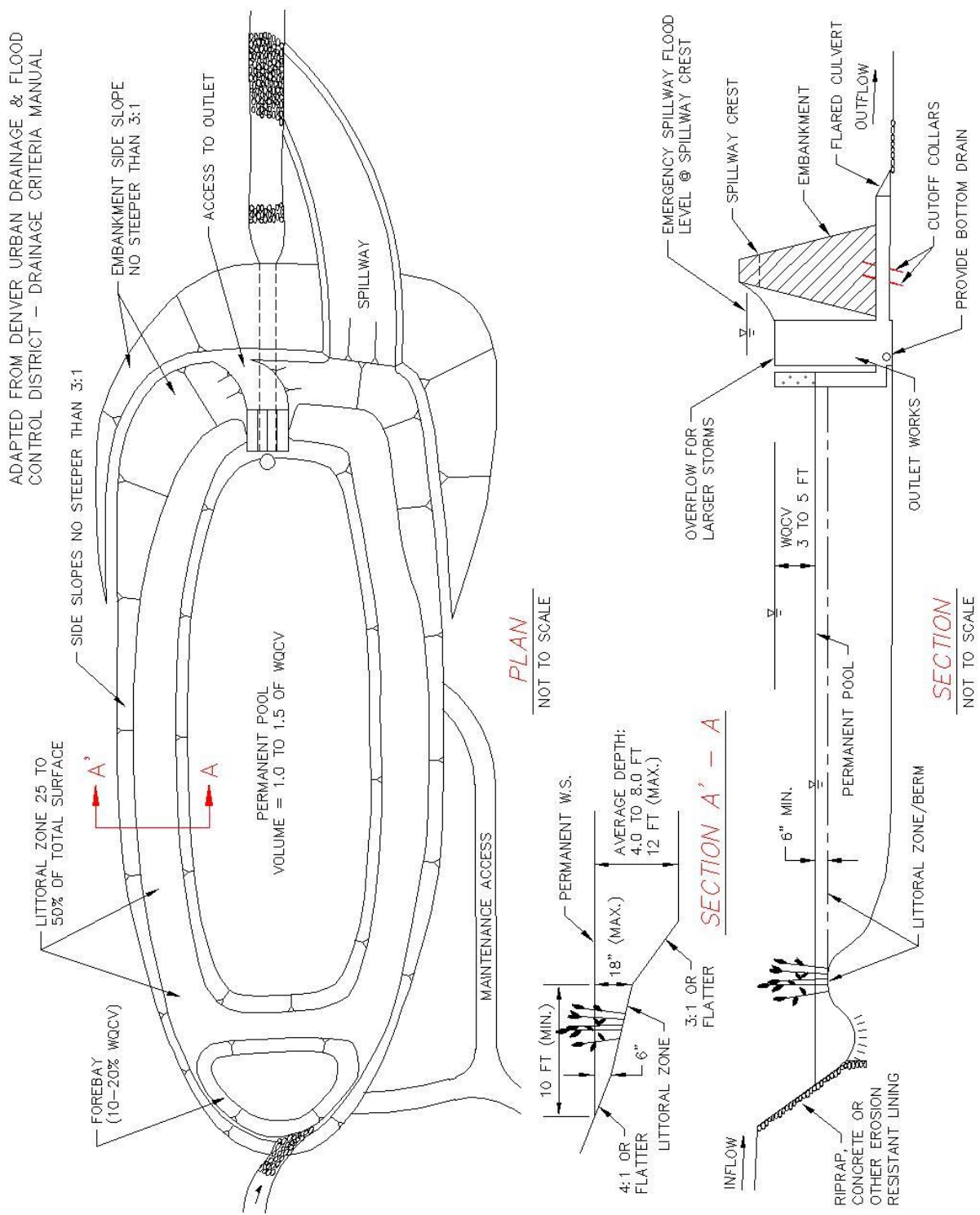
FIGURE 38

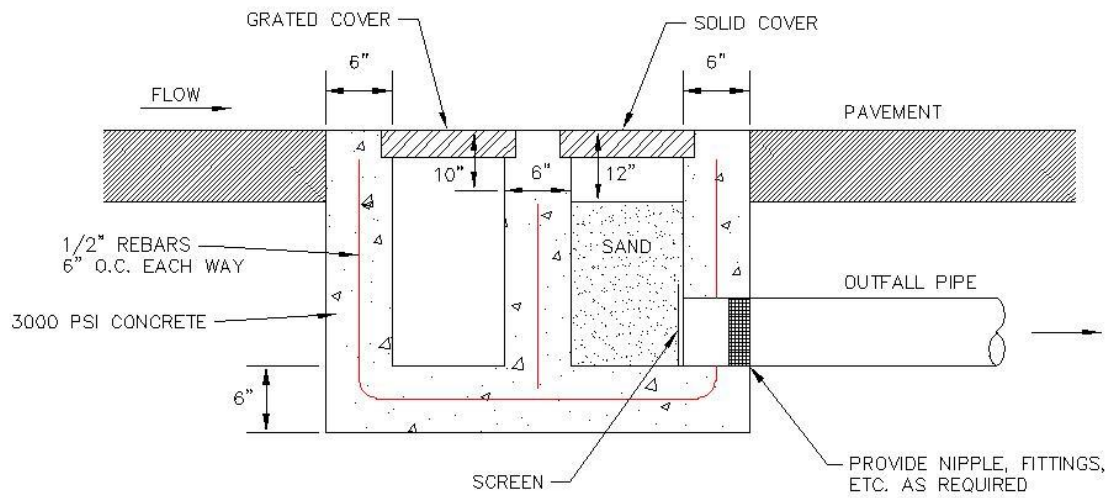
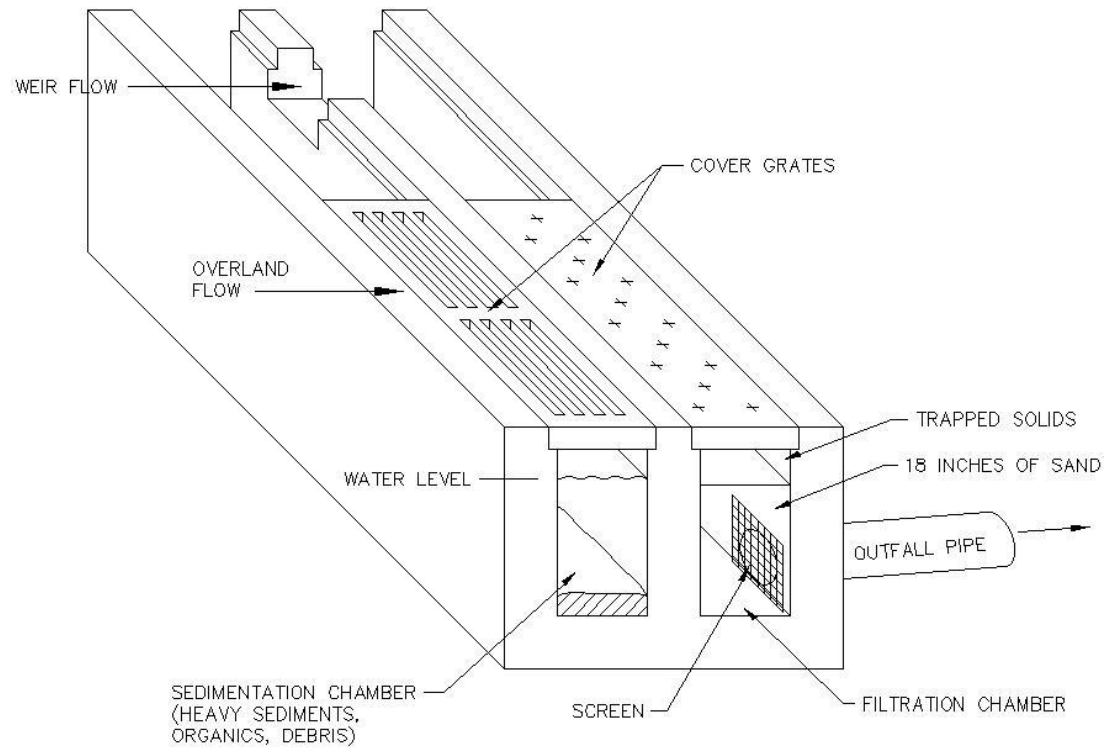


CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

WET EXTENDED DETENTION
BASIN TYPICAL DETAILS

FIGURE 39





FROM: EPA 1992



CARL JUNCTION, MISSOURI STORMWATER MANAGEMENT CRITERIA

SAND FILTER SCHEMATIC

FIGURE 40

NEOSHO, MISSOURI

STORMWATER MANAGEMENT CRITERIA



ALLGEIER, MARTIN and ASSOCIATES, INC.

Consulting Engineers and Surveyors

December 12, 2009

Stormwater Management Criteria

Prepared for:

Neosho, Missouri



Prepared by:
ALLGEIER, MARTIN and ASSOCIATES, INC.
Hydro Division

December 12, 2009

**CITY OF NEOSHO, MISSOURI
STORMWATER MANAGEMENT CRITERIA**

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* * * * *

Acknowledgements

This manual is adapted from the Joplin, Missouri and Carl Junction, Missouri “Stormwater Management Criteria” prepared by Burns and McDonnell, 1998, revised May 2003, and from “Greene County Storm Water Design Standards” prepared April 1999.

1.0 GENERAL

1.1 Introduction: This document provides uniform procedures for designing and checking the design of storm drainage systems under the rainfall and land characteristics typical of Neosho, Missouri. Specific criteria have been developed and are applicable to the types of drainage systems and facilities ordinarily encountered in local urban and suburban areas. Other special situations may be encountered that require added criteria or more complex technology than included herein. Any design procedure conforming to current accepted engineering practice, including the application of computers, may be used for the design of storm drainage system in lieu of the computation methods presented in these criteria providing equivalent results are obtained.

1.2 Applicability: These criteria are applicable to all new storm drainage systems and facilities and to the rehabilitation of existing drainage system facilities.

1.3 General Requirements: The design shall be accomplished under the direction of a Registered Professional Engineer. The design shall also be based on land use in the tributary area as zoned, actually developed, or indicated by the City's current comprehensive land use plan, whichever basis produces the greatest runoff.

1.4 Definitions/Abbreviations:

- A. **Annual Probability (AP):** The probability, likelihood, or chance, of the magnitude of a storm event of a specified duration, being equaled or exceeded in any given year. Usually expressed as a percentage.
- B. **Bank Line:** The line of intersection, above the normal depth of flow at design capacity, of the side slope of an open channel and the adjacent ground.
- C. **BMP:** Best Management Practice.
- D. **CFS:** Cubic feet/foot per second.
- E. **City:** The City of Neosho, having jurisdiction and authority to govern.
- F. **City Engineer:** The municipal public works engineer or official having jurisdiction and authority to review and approve plans and designs for storm drainage systems.
- G. **Developer:** Any person, partnership, association, corporation, public agency, or governmental unit proposing to engage or currently engaged in "development" as defined below excluding the widening, resurfacing, or other improvement to existing streets, alleys, and sidewalks.
- H. **DCIA:** Directly Connected Impervious Area.
- I. **Diversions:** Discharge or conveyance of stormwater to a watershed other than the watershed of origination.
- J. **Development:** Any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, pavement, filling, grading or storage of equipment or materials.
- K. **Easement:** Authorization by a property owner for the use of any designated part of the property by another for a specified purpose.

- L. **FEMA:** Federal Emergency Management Agency.
- M. **Floodplain:** The normally dry land adjoining rivers, streams, lakes or other bodies of water that is inundated during flood events. In order to provide a standard national procedure for floodplain management, the U.S. Federal Emergency Management Agency (FEMA) has adopted the 1% Annual Probability (AP) flood as the base flood.
- N. **Floodway:** The channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment in order for the 1% AP flood to be carried without substantial increase in flood heights. FEMA's easements preclude any improvement to the land occupied by the easement.
- O. **Flowage Easement:** Easement acquired for the right to periodically use an open channel and its overbank floodway, or the overflow channel above an enclosed system element, to convey drainage. Flowage easements preclude any improvement to the land occupied by the easement.
- P. **Freeboard:** The difference in elevation between the top of a structure, such as a dam or open channel, and the maximum design water surface elevation or high water mark. It is an allowance against overtopping by waves or other transient disturbances.
- Q. **Improved Channel:** Any new open channel which has been constructed or existing channel which has been changed by grading or by the construction of lining materials.
- R. **MDNR:** Missouri Department of Natural Resources.
- S. **Natural Channel:** An existing channel that has not been altered by previous construction.
- T. **Owner:** The owner of record of real property.
- U. **Registered Professional Engineer:** A licensed engineer who is registered with and authorized by the Missouri Board for Architects, Professional Engineers and Professional Land Surveyors to practice.
- V. **Return Period:** Also referred to as return frequency or recurrence interval. A statistical term for the average frequency that a given event may be expected to occur although it does not imply that the event will occur regularly at even intervals. It can also be defined as the reciprocal of the annual probability of an event. For example, a 50-year storm has a probability of $1/50 = 0.02$ (2% AP) of occurring in any given year.
- W. **Site:** A tract, or contiguous tracts, of land owned and/or controlled by a developer or owner. Platted subdivisions, industrial and/or office-commercial parks, and other planned unit developments shall be considered a single site.
- X. **Storm Drainage System:** All of the natural and man-made facilities and appurtenances such as ditches, natural channels, swales, pipes, culverts, bridges, open improved channels, street gutters, inlets, and detention facilities which serve to convey surface drainage.
- Y. **Storm Water Detention Facility:** Any structure, device, or combination thereof with a controlled discharge rate less than its inflow rate.
 - a. **Controlled Area:** That part of the tributary area for which a detention facility is designed to control peak discharge rates.

- b. Detention Storage: The volume occupied by water between the levels of the principal and emergency spillway crests during operation of the facility.
- c. Dry Detention Facility: Any detention facility designed to permit no permanent impoundment of water.
- d. Emergency Spillway: A device or devices used to discharge water under conditions of inflow that exceed the design inflow. The emergency spillway functions primarily to prevent damage to the detention facility that would permit the sudden release of impounded water.
- e. Principal Spillway: A device such as an inlet, pipe, weir, etc., used to discharge water during operation of the facility under the conditions of the 1% AP or more frequent event.
- f. Private Detention Facility: Any detention facility controlling discharge from a site wholly owned and controlled by one owner or entity and not platted for future subdivision of ownership. Also, all facilities incorporating detention storage of stormwater in or on areas also used for other purposes such as parking lots, building or structure roofs, and open channels. Private detention facilities may be located off-site with approval of the City Engineer contingent upon documentation that drainage easements have been obtained for both the detention basin and the channel connecting the provisions for maintenance of the facilities.
- g. Public Detention Facility: Any detention facility controlling discharge from a tributary area owned by more than one owner and/or platted for future subdivision of ownership, except as defined as private detention facility herein.
- h. Regional Detention Facility: Any detention facility designed and located to provide detention on major drainage channels and with a tributary area of 100 acres or greater.
- i. Sediment Storage: The volume allocated to contain accumulated sediments within the detention facility.
- j. Wet Detention Facility: A detention facility that is designed to include permanent storage of water in addition to the temporary storage used to control discharge rates from the facility.

Z. Tributary Area: All land draining to the point of consideration, regardless of ownership.

1.5 Design Probabilities: All enclosed and improved open channel conveyance system components shall be designed for the 10% AP peak flow or the capacity of the existing upstream improved system, whichever is greater with the following exceptions:

- 1. Facilities located within the Federally designated floodway of the 1% AP floodplain shall be designed for the 1% AP peak flow.
- 2. Bridges, pipes and culverts crossing arterial streets shall be designed for the 2% AP peak flow, unless subject to the requirements of No. 1, above.
- 3. With consent of the City Engineer.

1.6 System Types and Applications:

A. Enclosed Pipe-Inlet Systems: Enclosed systems consisting of underground pipes, culverts, curb inlets and similar functional underground structures shall be used to convey stormwater under the following conditions.

- 1. Within the right-of-way of improved streets, regardless of system design capacity.
- 2. In all areas other than residential where the bank line of an open channel, either natural or improved, would be within 30 feet of any existing or proposed habitable structure, regardless of system design capacity.
- 3. In residential areas where the bank line of an open channel, either natural or improved, would be within 60 feet of any existing or proposed residential structure.

Enclosed systems may be used to convey stormwater at all locations where open systems are permitted.

- B. Improved Channels:** Open systems consisting of improved open channels with intermittent culverts or bridges crossing streets and other surface areas may be used to convey stormwater in all areas except those excluded in the previous section. Lining of an improved channel is required in all developed areas where the 10% AP design discharge is equal to or greater than 200 CFS and less than or equal to 500 CFS.
- C. Natural Channels:** Existing natural channels may be retained in the drainage system of a developed area where the 10% AP peak discharge exceeds 500 CFS subject to the same exclusions as improved channels and with the additional requirement that the flow velocity of the 99% AP peak discharge does not exceed the following based on soils present in the channel bed and bank. Where design velocity exceeds the maximum, the channel should be improved as necessary or an enclosed system constructed.

<u>Soil Type</u>	<u>Max. Velocity of 1-Yr Peak Flow (fps)</u>
Fine sand, sandy loam	2
Silt loam, noncolloidal silts	3
Colloidal clays & silts, fine gravel	4
Coarse gravel, cobbles	5
Shale	6
Limestone bedrock	15

Additional easement and bank stabilization requirements are outlined in Sections 3.2 and 9.0, respectively.

- D. Overflow Systems:** As an integral part of the stormwater drainage system, whether enclosed or open, overflow channels shall be required in all areas in addition to, and above, the 10% AP conveyance elements. Each overflow component shall have sufficient hydraulic capacity, when combined with the capacity of the conveyance element, to convey the 1% AP peak discharge without damage to land or buildings.
1. The combined conveyance system shall provide sufficient capacity so that the 1% AP stage, plus 1 foot of freeboard, is at an elevation equal to or below the lowest elevation at which water may enter any proposed or existing building or structure.
 2. An overflow depth not exceeding seven (7) inches at the lowest point of the traveled way will be permitted where culverts cross streets.
 3. Permissible concurrent surface uses of overflow areas include lawns, gardens or other open uses; vehicular parking; or any other use not permanently obstructing the floodway.
 4. Prohibited concurrent surface uses include fencing; structures such as sheds, garages or outbuildings; materials storage; or any other use obstructing the floodway.
- E. Stormwater Detention Facilities:** Detention facilities shall be provided in connection with the development of land. Public and private detention facilities may be either wet or dry. Joint uses, such as parking and recreation, not interfering with detention functions are permitted for dry facilities. Rooftop and parking lot detention are acceptable for private facilities only.

- 1.7 Existing Drainage System:** Existing drainage system component pipes, structures, and appurtenances within the project limits may be retained as elements of an improved system providing:

1. They are in sound structural condition.
2. Their hydraulic capacity, including surcharge, is equal to or greater than the capacity required by these criteria.
3. Easements exist or are dedicated to allow operation and maintenance.

Discharge from an existing upstream storm drainage system shall be computed in accordance with the requirements of these criteria. The computed discharge shall be used to design the new downstream system even though the actual capacity of the existing upstream system may be less.

1.8 Waivers: The City Engineer may waive specific criteria or requirements to provide specific types of stormwater facilities as follows:

A. Detention Facilities: Provision to provide detention may be waived in part or in whole provided one or more of the following are met:

1. Development is to discharge within a Federal Insurance Study defined 1% AP floodplain
2. Developer provides downstream improvements to meet the tributary area peak discharge requirements to the satisfaction of the City Engineer
3. Development cannot be fully and/or practically served by surface or underground detention facilities
4. It is shown that construction of detention facilities will result in an increase of peak flow in the drainageway

If detention requirement is waived for one of the above reasons, a pro-rated fee of \$8,500.00 per acre for R1 type development and \$11,600.00 per acre for all other development will be charged for all undetained areas. The fee will be adjusted at a rate of +3% per year with the first adjustment occurring on January 1, 2009. The fee may be offset by the construction of downstream improvements. The improvements must be approved by the city engineer, and the cost of such improvements will be set by the city engineer.

For the following development, detention is not required:

1. Additions to, improvements, and repair of existing single-family and duplex dwellings.
2. Construction of any buildings, structures, and/or appurtenant service roads, drives, and walks on a site having previously provided storm water control as part of a larger unit of development.
3. Additions, remodeling, repair, replacement, and improvements to any existing structure or facility and appurtenances that does not cause an increased area of impervious surface on the site in excess of 1,000 square feet of that previously existing.
4. Construction of any one new single-family or duplex dwelling unit, irrespective of the site area on which the same may be situated.

B. Overflow Channels: In previously developed areas, requirements to provide for 1% AP storm conveyance by means of overflow channels may be reduced in circumstances where 1% AP protection is not reasonably attainable due to the location of damageable improvements with respect to the drainage system.

1.9 Amendments: The City Engineer may amend this criteria as he deems necessary.

1.10 Other References: Other agencies have technical and administrative criteria and regulations pertaining to the design, permitting and operation of drainage systems which are in addition to and

which may complement these criteria. When conflicts are encountered, the most rigorous criteria shall govern. Some of the more important references used in the preparation of this document include:

- A. American Public Works Association (APWA) Standard Specifications and Design Criteria:** The design criteria in this document is largely based upon national drainage standards outlined in American Public Works Association (APWA) "Standard Specifications and Design Criteria," and on Greene County, Missouri, Stormwater Design Standards modified to meet the City's requirements. Other specific references are contained throughout this document. The Criteria and Technical Design Aids contained in the Appendix provide specific references to their sources.
- B. Federal Insurance Agency - Floodplain Regulations and Implementing Ordinances Adopted by Municipalities:** Drainage systems designed within the limits of the designated 1% AP floodplain on the principal stream shall be designed to convey the flood as defined by applicable published floodplain information studies. For areas located in FIS Zone "A" outside the detailed study area, the developer shall prepare studies and calculations establishing the floodplain, elevation and width. These calculations shall be submitted to the reviewing agency for approval.
- C. Missouri Department of Natural Resource:** Rules and regulations of the Department of Natural Resources dealing with such issues as stream obstructions, channel changes, dams, and permits shall apply.

2.0 HYDROLOGIC CRITERIA AND METHODS

2.1 Scope: This section sets forth the hydrologic methods and parameters to be used for computations of runoff and peak rates to be accommodated by the storm drainage system.

2.2 Computation Methods for Runoff. Runoff rates to be accommodated by each element of the proposed storm drainage system shall be calculated using the criteria for land use runoff factors, rainfall, and system time outlined in the following sections. Computer models may be utilized so long as they produce calculated runoff to the system that is substantially the same as that calculated by the following criteria.

A. Rational Method: The Rational Method may be used to calculate peak rates of runoff to elements of enclosed and open channel systems, including inlets, when the total upstream area tributary to the point of consideration is less than 40 acres and does not include detention facilities. The Rational Method is defined as follows:

$Q = C i A$, where:

Q = Peak rate of runoff to system in C.F.S.

C = Runoff Coefficient (from Table C)

i = Rainfall intensity in inches per hour

A = Tributary drainage area in acres, The tributary area is either the total upstream tributary area or the total upstream tributary directly connected impervious area.

Rainfall intensity, used only for the Rational Method, shall be as indicated in Table A corresponding to the calculated time of concentration for either the total tributary area or the directly connected impervious area. The greater of the computed flow rate for a) the total tributary area or b) the directly connected tributary area shall be used for design.

B. Hydrograph Methods: The application of hydrograph methods is required for all conveyance systems having greater than 40 tributary acres and for all detention facilities. Computer models or manual methods are permissible.

1. Acceptable computer models

- a. SCS Technical Release No. 55 (TR-55) - "Urban Hydrology for Small Watersheds," 2nd Edition, June, 1986.
- b. SCS Technical Release No. 20 - "Project Formulation - Hydrology," 2nd Edition, May 1983.
- c. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-1 Flood Hydrograph Package," Version 4.1, June, 1998.
- d. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-HMS, Hydrologic Modeling System," Version 3.3, (or newer) October 2008.

Copies of the above are available for purchase through National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA., 22161. The HEC-1 and TR-55 packages are also available through PC-TRANS Software Distribution Service, University of Kansas Transportation Center, 2011 Learned Hall, Lawrence, Kansas, 66045 and a number of other private software. U.S. Army Corps of Engineers programs are available for free from the Hydrologic Engineering Center web page.

C. Rainfall: Rainfall data for runoff computations are presented in Table B. For Hydrograph methods, rainfall shall be distributed in time using the appropriate Huff's Quartile distribution.

2.3 Runoff Coefficients: Runoff coefficients relative to development and land use shall be as indicated in Table C. The indicated "C" values are applicable to the Rational Method and the "CN" values to hydrograph methods.

The runoff coefficients given in Table C are appropriate for 20% or 10% AP events. Estimation of peak flows for less frequent storms requires the use of a higher runoff coefficient because infiltration and other abstractions have proportionately less effect on the amount of rainfall that becomes runoff. To obtain runoff coefficients for other frequency events, the "C" value from Table C is multiplied by a frequency correction factor. The frequency correction factor is 1.10 for the 4% AP event, 1.20 for the 2% AP event, and 1.25 for the 1% AP event. However, the resulting runoff coefficient (original "C" multiplied by the frequency correction factor) may not be greater than 0.98.

Coefficients shall be based on the more runoff-intensive surface condition of either planned future land use or existing developed land use. Future land use shall be defined by the City's adopted comprehensive land use plan.

Undeveloped areas not zoned, but for which future land use is defined by the City's land use plan, shall be assigned runoff coefficients for the land use indicated by such plan. Undeveloped areas designated as agricultural or those for which no specific future land use is indicated shall be assigned a minimum of 35 percent impervious surface for purposes of the design of storm drainage systems.

As an alternative to the coefficients and for areas not listed in Table C, a composite runoff coefficient based on the actual percentages of pervious and impervious surfaces shall be used.

2.4 Time of Concentration (T_c): The time of concentration, T_c , for hydrograph method analysis shall be calculated as the sum of the overland flow time, and the channel flow (travel) time. The time of concentration, T_c , for the rational method shall be calculated as the channel travel time as described in 2.4.B, below. The total T_c shall not be less than 5.0 minutes regardless of the calculated time.

A. Overland Flow Time: For Hydrograph methods only. Overland flow time is determined using the Kerby-Hathaway equation. The maximum sheet flow distance for calculations shall not be greater than 200 feet in developed areas and 300 feet in undeveloped areas.

$$T_{OL} = \left(\frac{0.667 \cdot n \cdot L_{OL}}{\sqrt{S_{OL}}} \right)^{0.467}$$

Where: T_{OL} is the overland flow time in minutes

n is the overland flow roughness coefficient shown in Table 1

L_{OL} is the representative length of the overland flow path in feet

S_{OL} is the slope of the overland flow path in feet/foot

B. Channel Flow (Travel) Time: Determined from Kirpich equation. The "system" includes flow in street gutters, street ditches, enclosed pipe or box storm sewers, and improved or natural open channels.

$$T_{CH} = 0.0078 \cdot L_{CH}^{0.77} S_{CH}^{-0.385}$$

Where: T_{CH} is the channel flow time in minutes

L_{CH} is the length of channel flow in feet. For hydrograph methods, L_{CH} is measured from the end of the hydraulically most remote overland flow path to the point of interest. For the Rational method, L_{CH} is measured from a) the hydraulically most remote point on the drainage divide to the point of interest or b) the hydraulically most remote point of the directly connected impervious area to the point of interest.

S_{CH} is the slope of L_{CH} in feet per foot.

- C. Lag Time:** For use in the SCS Dimensionless Unit Hydrograph method, lag time shall be equal to 60 percent of the time of concentration ($0.6 \times T_C$).

3.0 EASEMENTS

3.1 General Requirements: Developers shall be required to dedicate (plat) easements for all system components to be maintained by the City including enclosed pipe systems, improved channels, and public detention facilities as well as maintenance access connections to street rights-of-way. Easements are also required, although not for City maintenance purposes, along open channels and around private detention facilities as indicated below and in all other areas deemed necessary by the City Engineer.

3.2 Permanent Drainage Easement Requirements:

A. Enclosed Systems: 15 feet minimum width or the structure/pipe O.D. plus 6 feet on each side.

B. Improved Channels: 30 feet minimum width or the top of bank width plus 10 feet on each side. The top of one bank shall have a minimum 10-foot wide strip graded for vehicle access with a maximum slope of 12 percent perpendicular to the contours.

C. Detention Facilities: 15 feet clear of any structure and 10 feet clear around the perimeter of the greatest of 1) the top of bank lines, 2) the 1% AP water-surface contour, or 3) 1 foot outside of security fences.

3.3 Access Easements: For facilities which are the City's responsibility, access easements for maintenance shall be connected to public street rights-of-way and shall not be spaced greater than 800 feet apart, public detention facilities. The maximum slope perpendicular to the contours shall be 12 percent. Access easements shall extend to the bottom of all improved channels with bottom widths greater than 7 feet and to the top of bank for narrower channels. These easements may overlay other permanent easements subject to maximum grade requirements.

3.4 Flowage Easements: Flowage easements shall be required in addition to and overlaying other permanent easements where applicable, including other public and private utility easements, where the 10% AP peak discharge exceeds 100 CFS. The flowage easement shall cover the overflow area for the conveyance element, whether open channel or enclosed system, determined as the 1% AP flood elevation plus one foot. Flood elevations shall be on file with the City and easement lines indicated on plats or permit plans. Limitations on permanent obstructions shall be included in the dedication with all other concurrent uses reserved to the property owner.

3.5 Natural Channels: For natural channels retained in the storm drainage system, permanent easements for undeveloped green space including the channel itself, shall be platted at a width of the 1% AP flood plain boundary plus 10 feet, or the top of bank width of the channel plus 10 ft. on each side, whichever is greater. (See Figure 3 for illustration.) These easements will be dedicated to the City but maintenance of the green space and the channel will be the responsibility of the individual property owner.

In lieu of dedicating the specified width of easement, bank stabilization may be constructed along the channel. For stabilized channels, easement requirements shall be the same as for improved channels. Refer to Section 9.0 for additional information on bank stabilization.

4.0 HYDRAULIC CALCULATION METHODS

4.1 Pipes and Open Channels: Flow shall be calculated by Manning's equation.

$$Q = \frac{A (1.486) (R^{2/3}) (S^{1/2})}{n}, \text{ where:}$$

Q = Discharge in cubic feet per second.

A = Cross sectional area of flow in square feet.

n = Roughness coefficient (see Table F).

R = Hydraulic radius (R = A/P) in feet.

S = Slope in feet per foot.

P = Wetted perimeter in feet.

Head losses, except friction losses, shall be calculated by

$$h = k (V^2/2g)^{1/2}, \text{ where:}$$

h = Head loss in feet.

V = Velocity of flow in feet per second at point of interest.

2g = 64.4 feet per second.

k = Coefficient (as shown in Table G).

4.2 Street Gutters: Flow shall be calculated by Izzard's formula, below. Figure 4 indicates a graphical solution for the formula.

$$Q = \frac{0.56 (Z) (S^{1/2}) (D^{8/3})}{n}, \text{ where:}$$

Q = The gutter flow in cubic feet per second.

Z = The reciprocal of the average cross-slope, including gutter section in feet per foot.

S = The longitudinal street grade in feet per foot.

D = The depth of flow at curb face in feet.

n = Manning's "n" (see Table F).

The following formula shall be used to determine the street grade (Sx) at any point on a vertical curve for use in calculating gutter flow. Grades shall be "plus" when ascending forward and "minus" when descending forward with all grades in feet per foot.

$$S_x = S_1 + \frac{X}{L}(S_2 - S_1), \text{ where:}$$

S_x = The street grade on a vertical curve at point x.

S_1 = The street grade at the PC of a vertical curve.

S_2 = The street grade at the PT of a vertical curve.

X = The distance, in feet, from the PC of the curve to point x.

L = The total length of a vertical curve, in feet.

- 4.3 Head Losses:** The following values for head losses in inlets, manholes and junction boxes may be used for design.

<u>Structure</u>	<u>Head Loss (ft)</u>
Inlet - One exit pipe only	0.5
Inlet - Thru flow @ less than 45° angle (one entry & one exit line)	0.1
Inlet - Thru flow @ greater than 45° angle (one entry & one exit line)	0.2
Inlet - Two or more entering lines	0.3

- 4.4 Culverts:** Culvert flow capacity shall be calculated according to standard engineering practice.

- 4.5 Computer Methods:** Computer models may be used for hydraulic calculations. For open channels the following models are permissible.

1. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-2 Water Surface Profiles."
2. U.S. Army Corps of Engineers, Hydrologic Engineering Center - "HEC-RAS River Analysis System."
3. Federal Highway Administration - "HY-7 WSPRO - A Computer Model for Water Surface Profile Computations."

5.0 ENCLOSED SYSTEM DESIGN

5.1 General Requirements: All enclosed drainage system components (pipes, culverts and structures except bridges) shall be structurally designed for an H-20 live load, a unit weight of 120 pcf for soil cover, and minimum lateral earth pressure of 40 pcf equivalent fluid pressure. The lateral earth pressure shall be increased as necessary for special conditions when present on a project.

5.2 Pipes and Culverts:

- A. Minimum Cover:** Minimum cover over all pipes and culverts shall be equal to 1.5 feet unless otherwise approved by the Director of Public Works.
- B. Minimum Size:** Minimum pipe size shall be 15-inch diameter.
- C. Downstream Conduit Size:** Conduit sizes, based on square feet of end area shall not decrease from upstream to downstream regardless of the calculated capacity of each conduit.
- D. Surcharge:** Surcharging of pipes under entrance control is permitted in structures subject to freeboard criteria for the structure and provision for pressure joints throughout surcharged lengths.
- E. Pipe Slopes:** Minimum invert slopes shall conform to the following:

Pipe Diameter (in)	Min. Invert Slope (%) for Round or Arch Pipe	
	RCP	CSP
15	0.32	0.64
18	0.26	0.52
24	0.17	0.34
30	0.13	0.26
36	0.10	0.20
42	0.08	0.16
48	0.07	0.14
54	0.06	0.12
60	0.05	0.10
72	0.05	0.10

5.3 Storm Sewer Inlets:

- A. Inlet Types:** Curb-opening inlets are preferred in street installations. Grated inlets may be used in addition to curb-opening inlets if necessary to control spread or depth of flow in the street. In off-street locations, only grated area-type inlets sized and designed for the specific location shall be permitted. Gutter deflectors shall be required for inlets installed on slopes greater than 4.0 percent.
- B. Configuration:** In street installations, the following dimensions apply to curb inlets.

Clear opening length	5.0 ft (min)
Clear opening height	5.0 in (min)
Clear inside width,	
perpendicular to curb line	3.0 ft (min)
Gutter depression depth at inlet	2.0 in (min)
Gutter transition length	
(a) Both sides in sump and upstream	

side on slopes	5.0 ft (min)
(b) Downstream side on slopes	3.0 ft (min)

C. Capacity: Inlet hydraulic capacity for new construction shall be determined from Table H for curb-opening inlets on slopes and from Figure 9 for curb-opening inlets in sumps. For area inlets in off-street locations, submit calculations based on specific inlet configuration, size, etc.

D. Location Requirements: Inlets shall be located along streets as required to limit the depth of flow in the gutters during the 10%AP discharge to the following:

<u>Street Class</u>	<u>Max. Width of Flow (ft)</u>
Undivided Streets (no median):	
<30 ft. back-to-back	10
30 to 35 ft. back-to-back	11
>35 ft. back-to-back	12
Divided Streets (with medians):	
Each directional roadway	As above
Intersections - all streets	6
Pedestrian Crosswalks - all streets	6

E. Freeboard Requirements: At inlets and other points of surface water entry into the enclosed drainage system, a minimum of 0.5-ft. shall be required between the peak design water surface elevation in the structure and the lowest elevation of the inlet opening. (Figure 10 illustrates the freeboard requirement). The water surface elevation in the structure shall be calculated as follows:

1. Invert elevation of the exit/outlet line (pipe), plus;
2. Depth (diameter) of the exit/outlet line (pipe), plus;
3. Minor losses, "h".

Minor losses shall be calculated by the equation, $h = k * (V^2/2g)$ where the coefficient "k" is determined from Table G and "V" is the velocity of the exiting line determined by dividing the flow, Q, by the area, A, of the exiting line.

F. Other Requirements:

1. A minimum drop across the invert of inlets, manholes and junction boxes shall be required as follows:

For flow angle change equal to or less than 30°	0.1 ft.
For flow angle change greater than 30°	0.2 ft.
For three or more lines, all flow angles	0.3 ft.

2. The crown elevation(s) of pipe(s) entering a structure shall be at or above the crown of the pipe exiting the structure.
3. Maximum spacing of manholes for pipes less than 30 inches in diameter shall be 600 feet.

6.0 STREET CROSSINGS

6.1 General Requirements: The following requirements apply both to culverts and/or bridges on open channels and to enclosed system conduits which cross arterial streets (unless otherwise approved by the City Engineer):

A. Hydraulic Capacity: The hydraulic capacity of the culvert or conduit shall be the 4% AP peak discharge with 0.5 ft. minimum freeboard at the lowest point in the street gutter grade. The capacity of the culvert or conduit shall be increased as required to provide the 0.5-ft. minimum freeboard below the lowest point of entry to any existing upstream habitable structure.

B. Overflow: Overflow of the street is permitted at the 1% AP peak discharge with the depth of flow over the street not to exceed 0.6 ft.

6.2 Enclosed Systems: In addition to the same general requirements listed above, surcharge of the conduit is permitted.

7.0 ENERGY DISSIPATION

- 7.1 General Requirements:** Energy dissipation shall be required where enclosed systems or detention basin spillways discharge to open channels with design discharge outlet velocities greater than the following.

<u>System Discharge Velocity (fps)</u>	<u>Receiving Channel Lining Type</u>
4.0	Natural, unlined
5.0	Constructed, turf-lined
7.0	Reinforced vegetation
12.0	Riprap or gabions
15.0	Concrete
15.0	Natural limestone

7.2 Structure Types:

- A. Pipes and Pipe-Arches ($d \leq 24"$):** For pipes and pipe-arches less than 24 inches in diameter, either
1. Prefabricated end sections with cast-in-place toe walls, or
 2. Enclosed vertical drop structures in accordance with Figure 11.
- B. Enclosed System ($Q < 100$ CFS):** For enclosed system structures having a design discharge capacity less than 100 CFS, one of the following.
1. Enclosed vertical drop structures in accordance with Figure 11.
 2. Bureau of Reclamation Basin VI impact basin - Figure 12.
- C. Enclosed System ($100 \text{ CFS} \leq Q < 400 \text{ CFS}$):** For enclosed system structures having a design discharge greater than or equal to 100 CFS but less than 400 CFS, one of the following.
1. Bureau of Reclamation Basin VI impact basin - Figure 12.
 2. Bureau of Reclamation Basin IX baffled chute - Figure 13.
- D. Enclosed System ($Q \geq 400 \text{ CFS}$):** For enclosed system structures having a design discharge greater than or equal to 400 CFS,
1. Bureau of Reclamation Basin IX baffled chute - Figure 13.
 2. Bureau of Reclamation Basin III SAF basin - Figure 14.

7.3 Channel Lining:

- A. Lengths:** Channel lining shall be required for a distance of 50 feet downstream from all energy dissipating structures. Where enclosed system pipes or structures, which are part of the major system, discharge into a channel, either improved or natural, at an angle greater than 15 degrees from the axis of the channel, lining shall be required for a distance of 30 feet along the channel, centered on the structure outlet. The major system is defined for the purposes of this paragraph as all drainage facilities equivalent to or larger than a 36-inch diameter pipe.
- B. Materials:** Acceptable lining materials are riprap, gabions, concrete or in-situ limestone.

8.0 IMPROVED CHANNELS

8.1 Geometric Criteria:

A. Bottom Width: The minimum bottom width for improved channels shall be 4.0 feet.

B. Side Slopes: The maximum side slopes for trapezoidal channels shall be as follows:

1. 4 horizontal to 1 vertical for turf or reinforced vegetative lining and the overflow channel area above the lining materials.
2. 2 horizontal to 1 vertical for all other lining materials except vertical concrete or gabion walls.
3. Flatter if necessary for stability of slopes.

C. Alignment Changes: Horizontal alignment changes shall be achieved by circular curves only having a minimum radius of:

$$R = \frac{V^2 W}{8D}, \text{ where:}$$

R = Radius of channel centerline, in ft.

V = Velocity of 10% AP design flow, in feet per second

W = Channel width at 10% AP water surface elevation, in ft.

D = Depth of 10% AP design flow, in ft.

8.2 Lining Height:

A. Minimum Height: Channel lining material shall extend above the channel invert to the depth of the 10% AP design discharge plus 6 inches of freeboard. The invert of all constructed channels shall be lined with concrete, riprap or gabions to a minimum height of 6 inches above the invert.

B. Increase on Curves: Along the outer side of horizontal curves, the lining height shall be increased as follows:

$$y = \frac{D}{4}, \text{ where:}$$

y = Increased vertical height of lining, in feet.

D = Depth of 10% AP design flow, in feet.

Increased lining height shall be transitioned from "y" feet to zero feet over a minimum of:

1. 30(y) feet downstream from the point of tangency (P.T.) of the channel curve.
2. 10(y) feet upstream from the point of curvature (P.C.) of the channel curve.

8.3 Lining Material Requirements: The following types of lining materials are acceptable alternatives based on the peak flow velocity in the channel. Other types of lining materials not specifically listed may be used when approved by the City Engineer.

10% AP Peak

<u>Velocity (fps)</u>	<u>Permitted Lining Material</u>
> 12.0	Sound in-situ limestone Concrete Grouted riprap
>7.0 to 12.0	Sound in-situ limestone Concrete Grouted riprap Gabions Riprap
5.1 to 6.9	In-situ limestone Concrete Grouted riprap Gabions Riprap Reinforced turf above invert lining
5.0 and less	In-situ limestone Concrete Grouted riprap Gabions Riprap Reinforced turf above invert lining Turf above invert lining

8.4 Optional Design for Improved Channels: In lieu of sloping banks and linings as specified above, vertical walls may be constructed for improved channels conveying greater than 400 CFS at design discharge with the following requirements.

- A. Vertical Walls:** Shall be designed and constructed as retaining wall structures.
- B. Materials:** Acceptable materials for vertical walls are reinforced concrete or gabions.
- C. Wall Height:** The minimum wall height shall be the greater of 1.5 feet or the depth of the 1-year peak water surface plus 0.5 ft. The height shall be increased at transitions and bends.
- D. Fence:** Any vertical wall height 30" or greater shall be protected by 4 ft. high (or higher) chain link fencing installed along the wall lines on both sides of the channel.
- E. Access:** Adequate provisions shall be made for pedestrian entry/exit from the channel.

8.5 Subdrainage for Linings: All channel linings, except turf, shall provide for relieving back pressures and water entrapment beneath and/or behind the lining material.

- A. Materials:** The following are acceptable alternative methods for providing subdrainage.
 1. Nonwoven geotextile filter fabrics.
 2. Graded aggregate filter material with a minimum thickness of 4 inches and gradation based on filter design criteria.

B. Weep Holes: For concrete or riprap-lined channels, screened 4-inch diameter "weep holes" shall be required located at the base of the sloped sides, at a maximum spacing of 15 feet on-center.

8.6 Diversions: Proposed diversions of tributary areas greater than 0.5 acres may not have an adverse impact on downstream properties. Supporting computations for peak flow rates, channel capacities and water-surface elevations for both pre and post diversion conditions shall be submitted.

9.0 NATURAL CHANNELS

9.1 Maintenance: The developer and later the individual property owner(s) shall be responsible for maintenance of the entire area of the drainage easement to be dedicated or platted along all natural channels retained in the storm drainage system. This maintenance shall consist of removal of obstructions including debris and foreign objects; deadfall, drift and dead trees; trees on the banks with substantially undercut roots; and fences and other improvements. Trees to be removed shall be cut to within one foot of the ground line. Grubbing will not be required.

9.2 Bank Stabilization: Bank stabilization may be constructed along the entire channel length to minimize the easement width as specified in Section 3.2. Stabilization must be constructed where the required easements would otherwise extend off of the developer's property. The following requirements shall apply to the design of bank stabilization. (See Figure 15 for illustration of a typical installation.)

A. Vertical Walls: Vertical wall channels with lined inverts and gabion walls shall be provided. The criteria for improved vertical wall channels are applicable to this design except as modified in this section.

B. Channel Bends:

1. Bank stabilization shall be constructed with the convex (outside) side wall within the existing incised channel.
2. The channel shall be graded to the average clear width of the existing channel.
3. The minimum radius of the convex wall shall be as necessary to clear a 1.5:1 theoretical slope from the existing top of bank to the top of wall location.

C. Wall Height: The minimum wall height shall be the greater of 3.0 feet or the one-year peak discharge flow depth above the channel invert.

D. Grading: Grading shall be performed as required to 1) remove sloughage, if any, and to backfill to the top of the wall elevation on the convex, or high, bank side, and 2) to excavate the slopes above the top of wall to 2:1 or flatter on the concave, or low, side.

E. Slope Cover: Reinforced vegetative cover shall be planted on all graded slopes.

10.0 STORM WATER DETENTION

10.1 Other Regulatory Requirements: In addition to these criteria, the requirements of the Missouri Dam and Reservoir Safety Council shall apply to all detention dams greater than 35 feet in height. Such facilities shall be classified as Downstream environmental zone class I and designed per MDNR regulations.

10.2 Maximum Release Rates: The detention facility allowable release rate shall be calculated with the assumption that the site is an undeveloped condition. The engineer shall use an appropriate time of concentration and curve number to fit that assumption.

10.3 Storage Volume Requirements:

- A. General:** Detention storage for all facilities shall be established by hydrograph routing methods. The volume shall be as required to limit the release rates to the maximums indicated in 10.2.
- B. Additional Requirements:** All detention facilities shall provide additional storage volume (beyond required flood storage) below the elevation of the principal spillway for five years of sediment accumulation in accordance with Figure 16. In addition, all facilities designed as wet basins shall provide permanent storage volume as necessary to maintain a minimum water depth of 3.0 feet.

10.4 Hydrograph Routing Methods:

- A. General:** Hydrograph routing is required for each return period to determine maximum inflow, detention volume and release rates.
- B. Rainfall Distribution:** To compute the design inflow hydrograph, Huff's Quartile Rainfall Distributions (50% curves) shall be used for developing the hydrographs. Durations of 1-hour, 2-hours, 3-hours, 6-hours, 12-hours and 24-hours shall be evaluated to determine the critical duration design event.
- C. Runoff Computation:** Runoff shall be computed by the SCS curve number method. Applicable curve numbers shall be obtained from Table C. The curve number shall be weighted by proportional land use in the tributary area.
- D. Routing Interval:** The routing time (hydrograph ordinate) interval shall be appropriate for the method used with a maximum time interval of 5 minutes unless otherwise approved.
- E. Routing Method:** Detention routing shall be by the storage-indication, or Modified plus, method.
- F. Required Steps:** In designing a detention facility, the following steps are required:
 - 1. From proposed spillway characteristics, calculate rating curves of spillway stage vs. discharge.
 - 2. Calculate detention stage vs. storage volume from pond configuration and depth.
 - 3. Develop inflow hydrograph.
 - 4. Perform storage routing through the proposed detention facility.
- G. Simplified Design:** A simplified design method is acceptable only for detention facilities having a tributary area of 10.0 acres or less.
 - 1. The SCS TR-55 computer model may be utilized for computer methods.

2. By manual methods, use Figure 17 to determine required storage volume.

10.5 Principal Spillways (Outlets):

- A. General:** The principal spillway shall be designed to convey all discharge from the detention facility from the 1% AP and more frequent (inflow and discharge equal to or less than the 1% AP) storms and shall function without mechanical or electrical components.
- B. Hydraulic Characteristics:** The principal spillway shall have the hydraulic characteristics of a weir, pipe or orifice, or a combination of these. Pipes shall be a minimum of six inches in diameter except in parking lot and rooftop detention where the minimum size and configuration of opening shall be designed specifically for each condition.
- C. Capacity:** The spillway shall have sufficient capacity to discharge 80 percent of the detention storage volume within 24 hours after the peak inflow has entered the basin, excluding the water quality capture volume.
- D. Trash Racks:** Trash racks, screens, etc., shall be provided at the principal spillway as necessary to keep the facility fully operational.

10.6 Emergency/Overflow Spillways;

- A. Required Installations:** Emergency spillways shall be required for all detention facilities formed by earth embankments or dams greater than 10.0 feet in height.
- B. Return Period for Operation:** Emergency spillways shall operate only for storms less frequent (higher inflow and discharge) than the 1% AP storm.
- C. Regulatory Criteria:** The Missouri Dam and Reservoir Safety Council criteria shall apply to the design of emergency spillways with sufficient capacity to discharge the 0.5*6-hour PMP hydrograph without overtopping the dam.
- D. Exemptions:** Emergency spillways are not required for
 1. Excavated detention basins.
 2. Detention basins on structure roofs.
 3. Detention basins utilizing surface parking areas.

10.7 Other Requirements:

- A. Wet Basins:** The design of wet detention facilities shall include the following:
 1. Provisions for complete drainage to permit sediment removal and other periodic maintenance activities.
 2. The limits of maximum ponding shall be no closer than 30 feet horizontally and no less than two feet below the lowest sill elevation of any habitable building or structure.
 3. The entire area covered by fluctuating water levels shall be seeded, fertilized and mulched, sodded, or otherwise surfaces to protect against erosion.

- B. Dry Basins:** Dry detention facilities with storage on other than roofs or paved surfaces shall conform to the following:
1. The bottom shall be graded at a minimum of 2 percent to drain across grass. A minimum of 0.5 percent slope may be used if an interior trickle channel is installed. The trickle channel shall be 4.0 feet or greater in width.
 2. The limits of maximum ponding shall be no closer horizontally than 10 feet to a habitable building or structure unless waterproofing of the building and pedestrian access areas to the building are properly documented.
 3. Vertically, the limits of maximum ponding shall not be less than two feet below the lowest sill elevation of any adjacent building.
 4. The entire basin shall be seeded, fertilized and mulched, sodded or paved.
- C. Side Slopes:** Slopes on the banks, dams, dikes or berms around and forming the basin shall not be steeper than 3 horizontal to 1 vertical (3:1) for all excavation or embankment slopes. Flatter slopes shall be required if necessary for stability with a safety factor of 2.0 for dams greater than 10 feet in height, and 1.5 for all other slopes.
- D. Open Channels.** Normally-permitted open channels may be used as detention areas provided that:
1. The limits of maximum ponding conform to the requirements for both wet and dry basins.
 2. The maximum depth of detention does not exceed four feet.
 3. The minimum flow line grade is 0.5 percent.
 4. The maximum side slopes of the detention area are 3:1 in trapezoidal channel sections. For other channel sections, features shall be designed in consideration of safety, stability and ease of maintenance.
 5. The entire detention area is seeded, fertilized and mulched, sodded or paved.
 6. No ponding occurs within public rights-of-way without specific written approval of the City Engineer, and the hydraulic elevations resulting from channel detention do not adversely affect adjoining properties.
- E. Erosion Control:** Principal spillways and outlet works, as well as conveyance system entrances to detention basins, shall be equipped with energy dissipating devices as necessary to limit the peak discharge velocity in conformance with Section 7.0.
- F. Rooftop Detention:** Detention storage may be met in total or in part by detention on roofs. Details of such designs shall include the depth and volume of storage, details of outlet devices and downdrains, and elevations and details of overflow scuppers. Connections of roof drains to sanitary sewers are prohibited. Design loadings and special building and structural details shall be subject to approval by the City Engineer. Rooftop detention areas are exempt from sediment storage requirements.
- G. Parking Lot Detention:** Paved parking lots may be designed to provide temporary storage of storm water on a portion of their surfaces as follows:
1. Detention areas shall not be located in a primary parking lot which is defined as the most accessible 80 percent of the total parking for a facility.
 2. Depth of storage shall be limited to a maximum of 12 inches.
 3. The maximum limits of ponding are no closer horizontally than 10 feet to any building unless waterproofing of the structure and pedestrian access to the building are documented, and vertically not less than two feet below the lowest building sill elevation.

4. Retaining walls or curbs used to contain storm water in parking lots must be constructed of reinforced concrete.
5. Parking lot detention areas are exempt from sediment storage requirements.

10.8 Construction, Operation and Maintenance:

A. Easements: Access and permanent drainage easements shall be required as outlined in Section 3.

B. Public Facilities:

1. Public detention facilities shall be constructed by the developer where approved by the City and after plan approval and issuance of a permit. Dedication of easements to the City will be required.
2. Regional detention facilities may be dedicated as public facilities upon conceptual approval of the location and final approval of the design and construction by the City.
3. Operation and maintenance shall become the responsibility of the City after dedication of the easements and acceptance of the facility by the City.

C. Private Facilities:

1. Private detention facilities shall be constructed by the developer or property owner after plan approval and issuance of a permit by the City. Dedication of permanent drainage easements to the City will be required.
2. Operation and maintenance of private detention facilities shall be the responsibility of the property owner and successors.

D. Maintenance Activities: For both public and private drainage facilities, required maintenance activities include but are not limited to, debris removal and cleaning, cutting of vegetation that impairs the function of the structure or otherwise creates a public nuisance, repair of erosion, removal of silt, and maintenance of structural facilities including outlet works.

E. Construction Record Drawings: Construction record drawings showing as-built elevations and dimensions for detention structures are required. Both grading and outlet structure as-built data is to be submitted. Construction record drawings shall have field verified dimensions and elevations noted by revision clouds.

11.0 DRAINAGE PLAN REQUIREMENTS

- 11.1 General:** This section governs the preparation of drainage plans which shall include all information, including drawings, and calculations concerning a subdivision's internal storm water systems; the method of handling off-site drainage; and the discharge of runoff from the proposed subdivision. The drainage plan shall be prepared by a registered professional engineer in accordance with the requirements contained herein and shall be submitted to the City Engineer for review and approval.
- 11.2 Required Information:** The drainage plan shall conform to the following requirements and show the indicated information on the drawing(s).
- A. Scale:** The drainage plan shall be prepared at 1" = 100' or larger unless otherwise approved by the City Engineer.
 - B. Identification:** The drawing shall specify the subdivision, landowner, developer, engineer and date of submittal.
 - C. Contours:** A contour interval of 1 foot or 2 feet is acceptable. All existing topography shall also be included with the date of topo survey indicated.
 - D. Bench Marks:** At least one (1) bench mark adjacent to or within the proposed subdivision shall be shown on the drainage plan. Use Mean Sea Level (MSL) datum/National Geodetic Vertical Datum (NGVD).
 - E. Plat Layout:** The outline of all lots and blocks plus all drainage easements, dedications and reserves shall be shown. Lot dimensions, setback lines and utility easements are not required.
 - F. Storm Sewers:** All storm sewers shall be shown with the following data:
 - 1. Pipe size or diameter (inches).
 - 2. Inlet sizes - length and width (feet).
 - 3. Drainage basin and sub-basin boundaries.
 - 4. Q_{10} for each sub-basin/inlet.
 - G. Channels:** Improved channels shall be depicted on the drainage plan with the following data indicated.
 - 1. Channel slope.
 - 2. Bottom width (feet).
 - 3. Side slopes.
 - H. Detention Areas:** All detention areas as required by these regulations shall be shown on the drainage plan with the following data.
 - 1. Static pool elevation where applicable.
 - 2. Maximum water surface elevations for the 50%, 10% and 1% AP storms.
 - 3. Discharge rates for the 50%, 10% and 1% AP storms.
 - 4. Size and type of control structure.
 - I. FEMA Data:** The limits of the FEMA floodway and floodplain shall be shown along with the appropriate base flood elevations (BFE). Where new subdivisions are proposed adjacent to unstudied or nondetailed studied streams, the developer shall submit the appropriate backwater

(HEC-2) calculations, encroachment analysis, and floodway data to be submitted to FEMA for review and approval.

J. Minimum Pad Elevations: Minimum pad elevations shall be shown for each lot adjacent to natural streams, improved channels or detention areas.

K. Off-Site Drainage: All off-site drainage areas which discharge into the subject subdivision shall be labeled with the basin size, in acres, and the 50%, 10% and 1% AP runoff rates, or peak flows.

L. Street Grades: Preliminary street grades and elevations at sumps and crests shall be shown on the drainage plan using arrows to indicate direction of drainage flows.

M. Permits: Indicate on the drainage plan all permits required by local, state and federal agencies and the status of each one.

N. Drainage Calculations: All calculations supporting the drainage plan as required herein shall be submitted to the City Engineer for review and approval.

11.3 Document Format: The drainage plan shall be a complete, bound document containing all drawings and supporting calculations. Pockets shall be provided for drawings to allow easy removal. All data shall be organized in such a manner as to allow a systematic and timely review. A minimum of two (2) copies of the document shall be submitted to the City at the time of final plat application.

12.0 CONSTRUCTION PLAN REQUIREMENTS

12.1 Scope: This section governs the preparation of plans for storm water system projects.

12.2 General: The plans shall include all information necessary to build and check the design of storm drainage systems. The plans shall be arranged as required by the City Engineer. Standard details of the City may be included by reference. Plans shall be sealed by a registered professional engineer and shall be submitted to the City Engineer for review and approval.

12.3 Scale: Plans shall be drawn at the following minimum scales. Larger scales may be needed to clearly present the design. Bar scales shall be shown on each sheet for each scale.

Plan:	1-inch	= 50 feet
Profile		
Vertical:	1-inch	= 5 feet
Horizontal:	1-inch	= 50 feet
Drainage Area Map		
On site:	1-inch	= 200 feet
Off site:	1-inch	= 1,000 feet
Structural Plans:	1/4-inch	= 1 foot
Graphic Drawings:	Varies	
SWPPP Drawings:	Varies	

12.4 Required Information:

A. Drainage Area Map: A drainage area map shall included and shall indicate the following:

1. Ridge line of the area tributary to each principal element of the system.
2. The area in acres.
3. The runoff coefficient "C" or "CN" for each area.

B. Plan View: All designed storm drainage systems shall be drawn in plan view and shall contain the following:

1. North arrow and bar scale.
2. Ties to permanent reference points for each system located outside of the street right-of-way.
3. Identification and location of each pipe, culvert, inlet, structure and existing utility affecting construction.
4. Right-of-way, property, and easement lines, and the 1% AP flood-plain and setback from the top of bank of an open channel to any building.
5. Existing man-made and natural topographic features, such as buildings, fences, trees, channels, ponds, streams, etc., and all existing and proposed utilities.
6. Location of test borings.
7. Existing and finish grade contours at intervals of 2.0 feet or less indicating existing and finish grades and slopes.
8. A uniform set of symbols and abbreviations subject to approval by the City Engineer.
9. The centerline of open channels within 50 feet of an enclosed drainage system and showing the direction of flow.

C. Profile View: All designed storm drainage systems shall be drawn in profile view and shall contain the following:

1. Existing and finish surface grade along the centerline of pipe except street centerline may be used when construction includes street construction.
2. Length, size and slope of each line or channel segment. Slope shall be expressed in percent.
3. Headwater elevation at the inlet end of each culvert.
4. Flow line (invert elevation in and out) at each structure.
5. Each existing utility line crossing the alignment shall be properly located and identified as to type, size and material.
6. Test borings.
7. All station and invert elevations of manholes, junction boxes, inlets or other structures.
8. The profile shall show existing grade above the centerline as a dashed line and proposed finish grades or established street grades by solid lines. It shall also show the flow line of any drainage channel, either improved or unimproved, within 50 feet on either side of the centerline. Each line shall be properly identified. The proposed storm sewer shall be shown as double solid lines properly showing the top of the pipe.
9. All manholes, inlets or other structures shall be shown and labeled with appropriate "Standard Drawing" designation, if applicable.

D. Design Information for Each Part of the System: The plans shall present design information for each culvert, structure, facility, pipe and channel segment and shall contain the following:

1. Tributary area in acres.
2. Design discharge and capacity in cubic feet per second.
3. Runoff coefficient "C", design storm return frequency, rainfall intensity and Manning's "n" value.
4. Discharge velocity at design flow.
5. Hydraulic grade line.
6. Type and grade of material (gage, class, etc.).

Schedules which indicate all variable dimensions and elevations covered by standards or "typical" drawings shall be shown on the plans. All design details for nonstandard structures shall be indicated on the plans. A minimum of one plan view and one sectional view shall be shown on the plans for each type of structure. Additional views may be required if necessary to clearly define the design. A reinforcing bar list is not required; however, the grade, type, size and location of the bars shall be clearly indicated on the plans.

E. Stormwater Pollution Prevention Plan (SWPPP): The SWPPP shall present information for each erosion and sediment control structure, construction entrance location and dimensions, construction sequence, seeding specifications and BMP details.

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13.0 WATER QUALITY PROTECTION

- 13.1 Introduction: This section covers the design of Best Management Practices (BMPs) to minimize the adverse effects of urban stormwater runoff on the quality of receiving waters.

It is recognized that specific water quality standards, other than those contained in the Missouri Clean Water Laws, have not been developed or adopted for these receiving waters. The objective of this policy is not to meet specific reductions of targeted pollutants, but rather to provide a generally effective level of pollutant removal by using reasonable, cost effective measures. The goal is to minimize, to the maximum extent practical, adverse impacts on the quality of the receiving waters.

It is important to recognize that the *structural Best Management Practices* (BMPs) for which design guidance is given in this section represent only one aspect of stormwater quality management. The most effective means of managing stormwater quality lie in overall watershed planning and zoning controls, and other *nonstructural* practices which are generally beyond the control of an individual development.

Data from communities across the country has shown that, as the total impervious area in a watershed exceeds ten to fifteen percent (10-15%), water quality declines unless mitigative measures are taken. The most important management tool is to limit the impervious area in these watersheds to these values. While these limits may be attainable for the watershed as a whole, they may not be possible for individual development or sub-basins. Structural BMP's will be required for these developments.

13.2 GENERAL DESIGN GUIDELINES

- a. Minimize the amount of runoff. The total quantity of pollutants transported to receiving waters can be minimized most effectively by minimizing the amount of runoff. Both the quantity of runoff and the amount of pollutant wash-off can be minimized by reducing the amount of *directly connected impervious area (DCIA)*. Impervious areas are considered connected when runoff travels directly from roofs, drives, pavement, and other impervious areas to street gutters, closed storm drains or concrete, or other impervious lined channels. Impervious areas are considered disconnected when runoff passes as sheet flow over grass areas, or through properly designed BMP's, prior to discharge from the site.
- b. Maximize contact with grass and soil. The opportunity for pollutants to settle out is maximized by providing maximum contact with grass and soil. Directing runoff over vegetative filter strips and grass swales enhances settling of pollutants as the velocity of flow is reduced. Infiltration of runoff into the soil is also increased.
- c. Maximize holding and settling time. According to ASCE ([Reference 13.1](#)), the most effective runoff quality controls reduce the runoff peak and volume. The next most effective controls reduce peak runoff rates only. For small storms the runoff rate should not exceed the pre-project peak flow rate from the fifty percent (50%) AP (2-year) storm. Most obnoxious pollutants (exceptions include water soluble nutrients and metals) can be settled out. By reducing the rate of outflow and increasing the time of detention storage, settling of pollutants and infiltration of

- runoff is maximized.
- d. Design for small, frequent storms. Drainage systems for *flood control* are designed for large, infrequent storm events. In contrast, stormwater quality controls must be designed for small, frequent storm events. In the Neosho area, eightysix percent (86%) of all twenty-four (24) hour rainfalls are one inch (1") or less (see [Figure 5](#)). Most pollutants are washed off in the "first flush", generally considered the first one-half inch ($\frac{1}{2}$ ") of runoff.
 - e. Utilize BMP's in series where possible. Performance monitoring of BMP's in Florida, Maryland, and Delaware has shown that the combined effect of providing several BMP's in a series can be much more effective in reducing the level of pollutants than providing a single BMP at the point of discharge. To the greatest extent practical, runoff should be directed first to vegetative filter strips, then to grass swales or channels, and then to extended detention basins, sand filters, etc.
 - f. Incorporate both flood control and water quality objectives in designs, where practical. Incorporating both flood control and water quality criteria into a single stormwater management facility is not only possible, but is encouraged. Whenever practical, combining several objectives, such as water quality enhancement and flood control, maximizes the cost- effectiveness of stormwater management facilities.

13.3 REQUIREMENTS

The following requirements will apply to all development.

- a. Stormwater runoff from any new development for which the total impervious area exceeds ten percent (10%) of the total land area of the development, must be directed through an extended wet or dry detention basin, or other properly designed BMP, prior to discharge from the site.
- b. Runoff from fueling areas and other areas having a high concentration of pollutants will be required to be directed to a sand filter or other properly designed BMP which provides filtration as well as settling.
- c. The required volume for capture and treatment shall be designed as the *water quality capture volume* (WQCV), and shall be determined as set forth in [Section 13.4.1](#).
- d. Detention storage must be provided to limit the peak flow rate from the fifty percent (50%) AP (2-year) storm to pre-project values. Detention facilities for peak flow control shall be designed as set forth in [Section 10.0](#).

13.4 DESIGN CRITERIA

13.4.a Water Quality Capture Volume

Water quality BMPs shall be designed to capture the runoff from the 86th percentile rainfall for the Neosho area as well as to capture the first flush of pollutants from directly connected impervious areas within the proposed development.

The required water quality capture volume (WQCV) to be used in design of extended wet and dry detention basins and other BMPs whose design is based upon capture and treatment of storm

water, shall be the greater of the following:

- 1) the first one-half inch ($\frac{1}{2}$ ") of runoff from the directly connected impervious area (DCIA) in the development, or
- 2) the *runoff* resulting from total rainfall depth of one inch (1") in twenty-four (24) hours over the entire development.

13.4.b Directly Connected Impervious Area

Impervious areas are considered connected when runoff travels directly from roofs, drives, pavement, and other impervious areas to street gutters, closed storm drains or concrete, or other impervious lined channels. Connected and disconnected impervious areas are illustrated in [Figure 33](#).

In order for an impervious area to be considered disconnected, runoff from the area must pass through a vegetative filter strip or other BMP meeting the requirements set forth in this section.

For determining the amount of impervious area, the following assumptions shall apply in the absence of more detailed data:

Single Family Lots

Average roof area:	2500 square feet
Average drive area:	800 square feet
Average impervious area per lot:	3500 square feet

If gutter downspouts are directed to drain toward lawn areas, seventy-five percent (75%) of the roof area shall be considered disconnected.

Duplexes and Patio Homes

Average roof area:	2500 square feet
Average drive area:	1600 square feet
Average impervious area per lot:	4500 square feet

If gutter downspouts are directed to drain toward lawn areas, seventy-five percent (75%) of the roof area shall be considered disconnected.

Multi-Family, Commercial and Other Areas

The amount of impervious area contained in multi-family, commercial, office and manufacturing developments shall be determined based upon the site plan for the development.

13.4.c Vegetative Filter Strips

Vegetative filter strips consist either of areas of undisturbed vegetation in good condition, including trees, grass, sod or other vegetative cover which meets the objectives for this BMP, or areas where new vegetation has been established. Vegetative filter strips shall be provided in areas of sheet flow only. The hydraulic loading for filter strips shall not exceed 0.05 cfs per lineal foot of filter strip length for the fifty percent (50%) AP (2-year) storm (equal to the runoff per unit width from a four hundred feet (400') length of impervious area).

The minimum width of the filter strip shall not be less than twenty percent (20%) of the length of the sheet flow from the upstream impervious surface, and in no case shall be less than six feet (6'). The slope along the width of the filter strip shall not exceed 4:1 (25%).

Typical details for vegetative filter strips are shown in Figure 34.

13.4.d Grass Swales

Grass swales may be provided to convey runoff from vegetative filter strips and impervious areas to BMP's designed for capture and temporary storage of runoff. Design criteria for grass swales shall be as follows:

Maximum side slopes: 4:1.

Maximum longitudinal slope: 5%.

Minimum longitudinal slope: 1%.

Maximum velocity: 2 feet per second for peak flow from the 50% AP (2-year) storm.

Grass swales shall be lined with sod or seeded and covered with suitable erosion control blanket and mulch.

Typical details for grass swales are shown in Figure 35.

13.4.e Extended Dry Detention Basins

Extended dry detention basins may be provided to capture and provide temporary storage for the required water quality capture volume. Extended dry detention basins shall be placed outside of the primary watercourses which allow off-site flows to pass through the development (i.e., "off-line") where possible.

Design criteria for extended dry detention basins shall be as follows:

Volume: Minimum volume shall be one hundred and twenty-five percent (125%) of the required water quality capture volume (WQCV). Detention basins for water quality may be combined with detention basins for flood control. Effects of the WQCV may be considered in the design for flood

control.

Drain time: The WQCV shall be released over a minimum period of twenty four (24) hours and a maximum period of seventy-two (72) hours.

Outlet structure: Outlet structures shall consist of a perforated riser pipe, outlet pipe and gravel filter material as shown in Figures 36 and 37. The minimum allowable riser pipe diameter is eight inches (8"). The riser pipe shall be connected to an outlet pipe of equal or greater diameter. The outlet pipe shall have adequate capacity to carry the maximum rate of flow from the riser pipe. Material for the riser pipe shall be Schedule 40 PVC, ductile iron, or corrugated, galvanized metal.

A removable cap shall be provided at the top of the riser pipe. The cap shall have a one inch (1") diameter hole for air relief.

The outlet pipe shall be bedded in firmly compacted clay, free of stones. For dams exceeding ten feet (10') in height, an anti-seep collar shall be provided around the pipe.

Number of rows of perforations, number of perforations per row and diameter of perforations for the riser pipe shall be specified on the plans. Perforation pattern shall be determined based upon orifice calculations to provide for release of the WQCV over the specified time. Perforations shall meet the following requirements:

Minimum perforation diameter:	1/4 inch
Maximum perforation diameter:	1 inch
Minimum number of holes per row:	4
Maximum number of holes per row:	8
Minimum row spacing:	4 inches
Maximum row spacing:	12 inches

Freeboard: Where the basin is to be utilized as a water quality BMP only, twelve inches (12") minimum freeboard shall be provided above the WQCV.

Forebay: It is preferred that a forebay be provided to dissipate energy from incoming flows and to trap settleable sediment entering the basin. The forebay should be separated from the remainder of the basin by an earth dike meeting the requirements of Section 10. The top of the dike shall be set six inches (6") above the stage of the WQCV. Outflow from the forebay to the basin shall be through a gravel filter meeting the requirements of Section 14.5.2 (Figure 24). The top of the gravel filter shall be set equal to the stage of the WQCV.

The volume of the forebay shall be a minimum of ten percent (10%) and a maximum of twenty percent (20%) of the WQCV. The volume of the forebay is considered to be part of the required WQCV, not additional volume.

General construction requirements: The optimal length to width ratio for a water quality detention basin is four (4). The length to width ratio should be no less than two (2). The minimum allowable length to width ratio is one (1). Side slopes, dams or dikes, and retaining walls shall meet the

requirements of [Section 10](#).

Overflow spillways: Where the basin is to be utilized as a water quality BMP only, a spillway or outlet structure meeting the requirements of [Section 10](#) and capable of passing the peak flow from a 1% AP (100-year) storm for the drainage area upstream of the basin, shall be provided. The lowest point on the spillway or outlet structure shall be set at the top of the WCQV.

Trickle channels: Trickle channels shall be provided to provide grade control and to minimize chronic wet areas. Trickle channels shall be constructed of six inch (6") stone or other porous medium. A typical trickle channel cross section is shown in [Figure 37](#).

A typical plan and section for extended dry detention basins are shown in [Figure 38](#).

13.4.f Extended Wet Detention Basins

Extended wet detention basins may be provided to capture and provide temporary storage for the required water quality capture volume. Extended wet detention basins shall be placed outside of the primary watercourses which allow off-site flows to pass through the development (i.e., "off-line") where possible.

Design criteria for extended wet detention basins shall be the same as for extended dry detention basins, with the following exceptions:

The volume of the permanent pool should not be less than 1.0 to 1.5 times the WQCV.

A bench area (littoral zone) with a width of ten feet (10') shall be provided as shown in [Figure 13.8](#). It is preferred that emergent aquatic vegetation be provided in this zone.

It is recommended that a minimum of twenty-five percent (25%) of the WQCV be provided in the upper eighteen inches (18") of depth. A maximum of fifty percent (50%) of the permanent pool volume shall be provided in the upper eighteen inches (18") of depth.

Depth of the principal portion of the permanent pool shall be a minimum of four feet (4').

It is preferred that a forebay meeting the same requirements as specified for dry detention basins, be provided.

Where perforated riser pipes are not encased in gravel, only corrugated metal or ductile iron pipe may be used.

Typical details for extended wet detention basins are shown in [Figure 39](#).

13.4.g Sand Filters

Runoff from fueling plazas, vehicle maintenance areas, solid waste storage or transfer areas, and other areas having potentially high concentrations of contaminants shall be passed through a sand filter prior to discharge to receiving waters.

Total impervious area draining to a sand filter will generally be one (1) acre or less. Sand filters shall be provided with a sedimentation chamber and a filtration chamber. Design of sand filters shall be based upon the Austin, Texas first flush filtration basin (full sedimentation design) as described in Debo and Reese pp. 596-598 ([Reference 13.2](#)). A schematic cross section of a sand filter is shown in [Figure 40](#).

13.4.h Other Structural BMPs

Constructed wetlands, porous pavements and other structural BMPs for which detailed design criteria can be documented in generally accepted literature can be provided in addition to, or in lieu of, the BMPs described above, provided the objectives of this section can be met. The use of infiltration basins and trenches is discouraged due to possible adverse impacts on groundwater.

13.5 OPERATION AND MAINTENANCE

The City of Neosho provides no maintenance of water quality BMPs located on private property. Maintenance must be provided by the owner of the property upon which the BMP is located. Maintenance includes, but is not limited to, removal of debris, control of vegetation, removal of accumulated sediment when the WQCV volume has been reduced by 25% or more.

Extended detention basins and wetlands or other “capture and storage” BMPs shall be located within a single lot or property, within a designated drainage easement. Where BMPs are located in common areas or adjoining off-site areas, the property upon which the BMP is located shall remain in the ownership of the developer or property owners’ association.

Where a property owners’ association is formed, restrictive covenants which provide for collection of fees for maintenance of the BMPs shall be filed in the office of the Jasper or Newton County Recorder of Deeds, as appropriate. Restrictive covenants must be approved by the County legal counselor prior to filing of the final plat.

13.6 REFERENCES

1. American Society of Civil Engineers, Manuals and Reports of Engineering Practice No. 77 (WEF Manual of Practice FD-20), Design & Construction of Urban Stormwater Management Systems, Chapter 12. American Society of Civil Engineers, New York, NY, 1992.
2. Debo, T.N. and Reese, A.J., Municipal Stormwater Management, Chapter 13, Lewis Publishers, Boca Raton, FL, 1995.

SECTION 14 - EROSION & SEDIMENT CONTROL

14.1 Introduction: The purpose of this section is to provide detailed design criteria and standards for the design of erosion and sediment control measures as required by the City of Carl Junction's National Pollutant Discharge Elimination System permit.

14.2 GENERAL GUIDELINES

The goal of the regulation is to effectively minimize erosion and discharge of sediment from construction sites by application of relatively simple and cost effective Best Management Practices (BMPs). General guidelines for erosion and sediment control are listed below. Sediment and erosion control plans must demonstrate consistency with these guidelines.

- ▶ Minimize the area disturbed by construction at any given time.
- ▶ Stabilize disturbed areas as soon as possible by re-establishing sod, other forms of landscaping, and completing proposed structures, pavements, and permanent storm drainage systems.
- ▶ Provide for containment of sediment until areas are stabilized.
- ▶ Provide permanent erosion control by constructing and maintaining the permanent storm drainage system and maintaining vegetative cover, pavements, and other surface coverings in good condition.
- ▶ Avoid environmentally sensitive areas. Streams, springs, sinkholes, lakes, or wetlands are easily affected by sediment from construction sites. Careful planning and additional controls are needed when construction site are located in, or in close proximity, to these areas.
- ▶ Recognize sheet flow vs. concentrated flow. In areas where runoff occurs primarily as sheet flow, containment of sediment is relatively simple. In these areas, straw or hay bales, silt fences, and vegetative filter areas can be very effective. Where flow is concentrated, containment of sediment becomes more difficult as the rate and volume of flow increase. In these areas, more elaborate controls such as sedimentation basins must be provided.
- ▶ Recognize temporary vs. permanent controls. The greatest potential for soil erosion occurs during construction. Temporary controls are those which are provided for the purpose of controlling erosion and containing sediment until construction is complete. Temporary controls include straw or hay bale dikes, silt fences, erosion control blankets, etc., which are not needed after the area is stabilized. Permanent controls consist of vegetative cover, riprap, concrete trickle channels, detention basins, etc., which will

remain in place through the life of the development. It is possible for the same feature to serve both a temporary and permanent purpose. The difference between temporary and permanent erosion control should be clearly recognized in preparing an erosion and sediment control plan.

14.3 SITE DEVELOPMENT PERMITS

14.3.a Site Development Permit Requirements.

A Site Development Permit must be obtained before any land is graded for non-agricultural purposes.

Grading is defined as any excavation or filling or combination thereof. Grading of agricultural land is considered non-agricultural whenever soil is excavated for sale off the site or soil from other properties is brought onto the site.

The Public Works Department may waive the requirement for a Site Development Permit in the following cases:

1. Sites where one (1) acre or less is graded, provided the graded area is located a distance of twenty-five feet (25') or more from a spring, sinkhole, cave, wetland, watercourse, or floodplain, and where the proposed construction does not include the construction of stormwater detention basins or other drainage facilities.

NOTE: Lots in new subdivisions will be considered part of the entire subdivision site area.

2. The following activities, provided they are not located within twenty-five feet (25') of a spring, sinkhole, cave, wetland, or watercourse:

- a. Grading for single family residences.

NOTE: Lot grading done as a part of an overall subdivision plan in order to make lots buildable or prepare lots for sale is not exempt.

- b. Grading and repair of existing roads or driveways.
- c. Cleaning and routine maintenance of roadside ditches or utilities.
- d. Utility construction where the width of the disturbed area for trench excavation and backfill is twenty feet (20') or less.

3. Emergency construction required to repair or replace roads, utilities, or other items affecting the general safety and well being of the public.

For emergency construction sites which would otherwise be required to obtain a permit and for which remedial construction will take more than fourteen (14) calendar days, application for the permit must be made within three (3) calendar days from the start of construction.

14.3.b Permit Procedure

The following items must be submitted prior to issuance of a Site Development Permit:

- b.1. Completed site development permit application signed by the property owner or his legally authorized agent. Each application shall bear the name(s) and address(es) of the owner or developer of the site and of any consulting firm retained by the applicant together with the name of the applicant's principal contact at such firm and shall be accompanied by a permit filing fee.
- b.2. Each application shall include a statement that any land clearing, construction, or development involving the movement of earth shall be in accordance with the Erosion and Sediment Control Plan and that a certified contractor shall be on site on all days when construction or grading activity takes place.
- b.3. Site Development permit fee. Checks must be made payable to Neosho City Clerk.
- b.4. An approved sediment and erosion control plan (SECP).
- b.5. Performance bond or other required security.
- b.6. For sites where one (1) acre or more of land are disturbed the following additional items are required:
 - a. A copy of the Missouri State Operating Permit.
 - b. An approved Stormwater Pollution Prevention Plan (SWPPP).
- b.7. Other State or Federal permits, if required (see Section 14.4).

The submittal and approval procedure is as follows:

1. Subdivisions

A sediment and erosion control plan (SECP) shall be submitted for review along with the plans for the subdivision improvements.

Site development permits for subdivisions can be issued after approval of the plans for the subdivision improvements by the Public Works Director, and the items listed above are received.

2. Buildings

Two (2) copies of the sediment and erosion control plan (SECP) shall be submitted to the Public Works Department along with the building plans.

Site development permits can be issued after approval of the SECP and storm drainage plans by the Public Works Director and the items listed above are received.

For sites served by septic systems or other individual on-site wastewater systems, the wastewater systems plans must also be approved prior to issuance of the site development permit.

3. Other Sites

Other sites include borrow and spoil areas, gravel mining areas, and any other sites where a subdivision plat or a building permit is not required.

Two (2) copies of the sediment and erosion control plan (SECP) shall be submitted to the Public Works Director for review.

A site development permit can be issued after approval of the SECP by the Public Works Director and the items listed above are received.

14.3.c Sediment & Erosion Control Plan (SECP)

1. Professional Qualifications

Sediment and Erosion Control plans must be prepared by and bear the seal of an engineer, land surveyor, architect, landscape architect, or geologist registered to practice in the State of Missouri or by a Certified Professional in Erosion and Sediment Control (CPESC) who has attained certification by the Soil & Water Conservation Society. When the total area of the site exceeds one (1) acre, or the drainage area of any watershed for which an element of the plan must be designed exceeds one (1) acre, the plan must be prepared under the supervision of an engineer registered in Missouri.

2. Plan Requirements

The sediment & erosion control plan must be drawn to scale and must include the following items:

- 1) Location map at a scale of 1" = 2000'.
- 2) Legal description of property.
- 3) North arrow and scale.
- 4) One-Call utility notification symbol.
- 5) Title block.
- 6) Signature block for Public Works Director.
- 7) Design professional's seal.
- 8) Existing topographic contours at five feet (5') maximum intervals.

NOTE: Contours cannot be interpolated from U.S.G.S. maps. Each fifth (5th) contour (index contour) shall be labeled and shown in heavier line weight. Index contours must be labeled in a sufficient number of locations to allow the plan to be followed. Labels for existing and finish grade contours shall be distinguished by use of different symbols or fonts.

- 9) Proposed grades.
- 10) Existing and proposed utilities.
- 11) Existing ground covering (open areas, tree masses, etc.).
- 12) Existing buildings, drives and pavements.
- 13) Proposed buildings or other structures, drives, and pavements.
- 14) Limits of area to be disturbed (shading preferred).

- 15) A natural resources map identifying soils, forest cover, and resources. This map should be at a scale no smaller than 1"=100'
- 16) All erosion and sediment control measures necessary to meet the objectives of this local regulation throughout all phases of construction and after completion of development of the site. Depending upon the complexity of the project, the drafting of intermediate plans may be required at the close of each season.
- 17) A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
- 18) Details of non-standard erosion and sediment controls.
- 19) Seeding & mulching requirements including seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type of line and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures.
- 20) Total site area, total disturbed area.
- 21) Location of stockpile areas, staging areas, etc.
- 22) Location of temporary construction entrance(s).
- 23) Provisions for maintenance of control facilities, including easements and estimates of the cost of maintenance.

14.3.d Bond Requirements

1. Subdivisions

A security agreement or other form of security acceptable to the City in the amount of the value of the required sediment and erosion controls, including the storm drainage system, must be received prior to issuance of the site development permit.

2. Buildings

If the site development permit is issued prior to the building permit, the only type of bond accepted will be a cash bond. After issuance of the building permit, the cash bond can be converted to an escrow, security agreement, or other form of bond allowed in the Zoning Regulations.

3. Other Sites

Only cash bonds will be accepted for sites where a subdivision plat or building permit is not required. A cash bond is obtained by submitting the required bond amount to the Neosho City Clerk's office in the form of cash, cashier's check or money order, and obtaining a receipt.

4. Amount of Security

The amount of security will be one thousand dollars (\$1,000.00) per graded acre for seeding and mulching, plus the estimated construction cost for permanent sediment and erosion control measures specified on the SECP. This includes all elements of the storm drainage system.

5. Release of Bond

Bond will be released one (1) year after seeding and mulching is complete, provided vegetation is firmly established. If vegetation is not firmly established at this time, the bond will be forfeited and the work will be completed under the direction of the City.

Bonds may be released sooner if vegetation is firmly established. Vegetation will be considered firmly established when it has survived from the permanent seeding season in which it is placed to the next permanent seeding season and growth has been established on all eroded areas which have been noted for repair.

14.4 OTHER PERMITS

14.4.a NPDES Stormwater Permit

When the area of land disturbance is one (1) acre or more, an application for a stormwater discharge permit must be submitted to the Missouri Department of Natural Resources. Permit requirements are set forth in 10 CSR 20-6.200 of the Missouri Clean Water Laws.

For sites requiring a State permit, the following procedure applies:

1. The sediment and erosion control plan is submitted to the Public Works Director.
2. If the plan is in substantial compliance with City requirements, the Public Works Director will issue a letter of "Conditional Approval of Stormwater Management Plan". The conditions of approval are the items noted by the Public Works Director in the letter as being deficient on the first submittal.
3. The applicant submits MDNR forms E and G, the MDNR fee (with check made payable to "Director of Revenue"), and the Neosho Public Works Director's letter of conditional approval to MDNR.
4. MDNR reviews the application.
5. A City permit can be issued upon receipt of a copy of the State permit. Construction can commence only after issuance of the City site development permit.

City Projects

City-funded projects are covered under general permit MO-R1000. Separate applications are not required for each project.

14.4.b "404" Permit

Grading activities in streams or wetlands may require a Department of the Army Permit under Section 404 of the Clean Water Act. It is the obligation of the property owner or operator to contact the Corps of Engineers to determine whether a permit is required whenever working in these areas. A copy of the Corps of Engineers written determination, where applicable, shall be provided prior to issuance of the site development permit.

14.4.c Floodplain Development Permit

A Floodplain Development Permit must be obtained from the Department of Public Works for development within Special Flood Hazard Areas designated on the Flood Insurance Rate Maps for Neosho, Missouri.

14.4.d Industrial Mineral Mines Permit

Sand and gravel excavation, quarries, and gravel mines must obtain a permit from the Missouri Department of Natural Resources, Land Reclamation Division. Contact the Division of Land Reclamation at P.O. Box 176, Jefferson City, MO 65102 for information concerning these permits.

14.5 DESIGN STANDARDS & CRITERIA

14.5.a Grading

Clearing and grading of natural resources, such as forest and wetlands, shall not be permitted except when in compliance with the design criteria. Clearing techniques that retain natural vegetation and drainage patterns shall be used to the maximum extent practicable. Clearing, except that necessary to establish erosion and sediment control devices, shall not begin until all sediment control devices have been installed and have been stabilized.

1. Maximum grades

Cut or fill slopes shall not exceed three (3) horizontal to one (1) vertical (3:1), except as approved by the City of Neosho to meet other community or environmental objectives.

2. Maximum height

Cut or fill slopes shall not exceed fifteen feet (15') feet in vertical height unless a horizontal bench area at least five feet (5') in width is provided for each fifteen feet (15') in vertical height.

3. Minimum slope

Slope in grassed areas shall not be less than one percent (1%).

4. Construction Specifications

Construction of private and public streets must comply with specifications set forth by the Neosho Public Works Department. For all other areas, construction specifications stating requirements for stripping, materials, subgrade compaction, placement of fills, moisture and density control, preparation, and maintenance of subgrade must be included or referenced on the plans or accompanying specifications.

5. Spoil Areas

Broken concrete, asphalt, and other spoil materials may not be buried in fills within proposed building or pavement areas.

Outside of proposed building and pavement areas, broken concrete, asphalt or stone may be buried in fills, provided it is covered by a minimum of two feet (2') of earth.

Burying of other materials in fills is prohibited.

6. Stockpile Areas

Location of proposed stockpile areas shall be outlined on the plans and specifications for proper drainage included.

7. Borrow Areas

The proposed limits of temporary borrow areas shall be outlined in the plans and a proposed operating plan described on the SECP.

At the time borrow operations are completed, the area shall be graded in accordance with the criteria set forth above and vegetation re-established.

14.5.b Sediment Control

1. Existing Vegetative Filter Area

Existing vegetative filter areas may be used where:

- a) unconcentrated sheet flow occurs,
- b) an area of existing vegetation a minimum of twenty-five feet (25') in width can be maintained between the area to be graded and a property line, watercourse, sinkhole, spring, wetland, or waterbody,
- c) existing ground slope is no greater than five to one (5:1) or twenty percent (20%),
- d) the existing vegetative growth is of sufficient density and in sufficiently good condition to provide for filtration of sediment.

The minimum width of the vegetative filter area shall be twenty percent (20%) of the width of the tributary area. Vegetative filter areas can be used as both a temporary and permanent practice.

2. Straw bale dike or silt fence

Containment areas constructed of hay or straw bales or silt fence may be provided in areas where:

- 1) unconcentrated sheet flow occurs.
- 2) an area of existing vegetation a minimum of twenty-five feet (25') in width cannot be maintained

between the area to be graded and a property line, watercourse, sinkhole, spring, wetland, or classified lake.

3) the maximum width of cleared area upslope of the bale dike or silt fence is as set forth below:

Slope of cleared area (%)	Maximum width upslope of dike/silt fence (feet)
2 to 5	100
5 to 20	50
> 20	25

Either cereal grain straw or hay may be used for bale dikes. Straw bale dikes shall be constructed as shown in [Figure 17](#).

Silt fence may be used in lieu of hay or straw bales. Silt fence shall be constructed as shown in [Figure 18](#).

Straw bale dikes must be installed level, that is, "along the contour", in order to avoid creating points of concentrated overflow. Straw/hay bale dikes and silt fences must be periodically inspected and replaced as necessary if deteriorated.

Hay bale dikes and silt fences are temporary practices.

3. Temporary Containment Berm

Temporary containment berms may be used in lieu of straw bale dikes or silt fence, under the same conditions set forth above. An overflow area six inches (6") below the top of the berm and five feet (5') in length or an approved alternative must be provided for each two hundred feet (200') of berm length. The overflow area shall be lined with six (6) mil or thicker polyethylene plastic, six (6) ounces or heavier non-woven filter fabric, or other approved lining. Plastic and fabric liners shall be held in place by covering the perimeter with earth or weighting down with large rock or sandbags.

Containment berms and swales must be installed level, "along the contour".

Accumulated sediment must be removed when it reaches one-third (1/3) of the berm height.

Temporary containment berms and accumulated sediment must be completely removed after the tributary area is stabilized.

Temporary containment berms shall be constructed as shown in [Figure 19](#).

4. Inlet Protection

This practice consists of protecting the inlet perimeter or opening with straw bales, silt fence or sandbags. The purpose of this practice is to keep sediment from collecting in storm drains. This practice is also useful when site conditions prevent locating a sediment basin downstream of the storm sewer outfall.

NOTE: Inlet protection described in this paragraph cannot be used where blockage of the inlet opening would result in flooding of residential dwellings, buildings, streets or roads, or off-site property.

a. Curb Inlets

Curb inlets can be protected from sediment entry by placing sand bags over the inlet opening. Sand bags must be replaced when deteriorated and removed when the area has been stabilized. Curb inlet protection is shown in [Figure 20](#).

Accumulated sediment must be removed from the street after each rainfall.

b. [Area Inlets](#)

In paved areas, area inlets can be protected by placing gravel filled sandbags up to two (2) courses high around the perimeter of the inlet.

Outside of paved areas or before pavement is placed, area inlets can be protected by installing a silt fence or straw bale dike around the inlet perimeter.

Type DI-1 inlets can be protected by placing sandbags over the openings.

Accumulated sediment must be removed prior to final approval.

Area inlet protection is shown in [Figure 21](#).

5. [Diversion](#)

Where flow must be diverted into sediment basins or other sediment retaining facilities, diversion berms or swales or other approved means of diverting runoff may be specified.

Where sediment enters a street which is up-grade from an existing street, means must be provided to divert runoff to a sediment basin before discharge from the site. The method of diversion will vary depending upon the phase of construction. After initial grading, an earth berm can be used. This is no longer possible after the street subgrade is completed and curbs are installed. After the street pavement is completed, sand bags can be used to divert the runoff into inlets for discharge into the sediment basin. Diversion of street runoff is shown in [Figures 22 and 23](#).

6. [Gravel Filter Dam](#)

Where concentrated flow occurs and less than two (2) acres of tributary drainage area are graded (i.e. a sediment basin is not required) or where construction of a sediment basin is not feasible, a gravel filter dam shall be provided prior to discharge of runoff from the property.

Gravel filter dams consist of a layer of filter fabric and crushed rock covering the upstream side of a riprap dike. Riprap shall be six and twelve inches (6" and 12") in size. Filter fabric may be woven or non-woven, Mirafi 500X, Mirafi 150NL, or equal. The purpose of the filter fabric is to remove sediment particles as water flows through it. The layer of crushed rock provides additional filtration protects the filter fabric, and holds it in place.

Where gravel filter dams are used as sediment basin outlets, one (1) square foot of filter fabric area shall be provided for each one thousand (1,000) cubic feet of storage. The minimum area provided shall be four (4) square feet.

Where gravel filter dams are used as ditch checks in channels, the gravel filter area shall extend

throughout the width of the dam.

Riprap stilling basins shall be provided downstream of the filter dam where discharge is to a grass channel.

Gravel filter dam details are shown in Figures 24 and 25.

7. Sediment Basin

Sediment basins shall be provided for all areas where concentrated flow occurs from an area of two (2) or more acres and vegetative cover has been stripped from more than one (1) acre. Sediment basins shall be designed to detain the first one-half inch (½") of runoff from the graded area for a period of at least twenty-four (24) hours (approximately two thousand (2,000) cubic feet per acre graded).

Sediment basins shall have an outflow control structure capable of providing the required detention time. Outflow control structures shall consist of a gravel filter dam meeting the requirements of Section 14.5.2.F, or a perforated riser pipe.

Sediment basins shall also be provided with an overflow structure capable of passing the peak flow rate for storms up to and including the 10% AEP (10-year) storm. The required sediment control volume shall be provided below the elevation of the overflow structure. One foot (1') of freeboard shall be maintained over the 10% AEP high water elevation.

Perforated riser pipes shall have a minimum diameter of eight inches (8") and shall be constructed of schedule 40 or stronger PVC pipe, galvanized corrugated metal pipe, or other approved pipe material. Riser pipes must be provided with a cap. Plans shall specify the height of the riser pipe above the basin floor, the number and spacing of rows of perforations, and the number and diameter of perforations per row. One and one-half inch (1 ½ ") crushed rock shall be placed around the riser pipes to act as a filter. A typical riser pipe detail is shown in Figure 28.

Outlet pipes shall have a minimum diameter of eight inches (8") and may be constructed of corrugated polyethylene pipe, corrugated metal pipe, Schedule 40 or stronger PVC or reinforced concrete pipe.

Overflow spillways must be constructed of riprap, concrete or other approved, non-erodible material.

Typical sediment basin details are shown in Figures 26, 27 and 28.

Sedimentation basins can be provided as temporary or permanent practices and can also serve as a permanent water quality BMP with appropriate design modifications to meet the criteria set forth in Section 135.

Detention ponds can be used for temporary sediment basins, provided it can be demonstrated that flood control requirements can be met as well as sediment control requirements.

Accumulated sediment must be removed and vegetation established prior to final release of security.

14.5.c Erosion Protection

1. Seeding and mulching

All disturbed areas must be re-vegetated before temporary sediment controls can be removed. Soil stabilization (seed and mulch) shall be completed within thirty days of clearing or inactivity in construction. Requirements for re-vegetated areas are as follows:

a) Topsoil

Spreading of topsoil is required for permanent seeding areas only. Topsoil stripped from the site shall be stockpiled for reuse. A minimum of four inches (4") loose depth (before rolling or compacting) of topsoil must be spread on the area to be seeded.

b) Lime

After topsoil is spread, lime shall be spread at the rate of eight hundred to nine hundred (800 to 900) pounds effective neutralizing material (ENM) per acre.

c) Fertilizer

Fertilizer shall be 13-13-13, (thirteen (13) pounds each of nitrogen, phosphorus, and potassium per one hundred (100) pounds) and shall be applied at a rate of two hundred to three hundred (200 to 300) pounds per acre.

d) Seed

Seed mix shall consist of sixty percent to eighty percent (60% to 80%) Kentucky 31 tall fescue and twenty percent to forty percent (20% to 40%) annual ryegrass. Purity shall be at least ninety-seven percent (97%), germination shall be at least eighty-five percent (85%). Seed mixture shall be applied at a rate of one hundred to one hundred fifty (100 to 150) pounds per acre.

e) Mulch

Type 1 Mulch

Where slopes are less than 4:1, cereal grain mulch is required at the rate of one hundred (100) pounds per one thousand (1,000) square feet (forty-five hundred (4,500) pounds per acre). Cereal grain mulch shall meet the requirements of Section 802 of the Missouri State Specifications for Highway Construction (State specifications) for Type 1 mulch. Mulch may be applied by hand, however it must be evenly spread. It is preferred that mulch be applied with a mechanical blower.

Type 1 mulch must be thoroughly wetted after application.

Type 3 Mulch

Where slopes are 4:1 or greater Type 3 mulch ("hydromulch") meeting the requirements of Section 802 of the State specifications. Type 3 mulch shall be applied at a minimum rate of two thousand (2,000) pounds per acre.

f) Permanent seeding season

Permanent seeding seasons run from March 1 to June 1 and from August 15 to November 1. Where possible, operations shall be scheduled to allow final seeding during these periods. When seeding cannot be completed during these times, areas shall be seeded and mulched upon completion of grading with the amounts of lime, fertilizer, seed, and mulch specified above, regardless of the season. Any areas where growth has not been established shall be re-seeded during the next seeding season.

g) Temporary seeding

Temporary seeding shall be applied to lot areas, building areas and other areas planned to receive other permanent coverings. Spreading of topsoil is not required in temporary seeding areas. Lime, fertilizer, seed, and mulch shall be applied at the rates specified above.

h) Maintenance

Areas seeded between March 1 - June 1 or between August 15 - November 1 must be maintained until growth is firmly established as set forth in Section 14.3.4.E.

i) Other specifications

Other seeding and mulching specifications may be used with the written approval of the Public Works Director.

2. Cut and Fill Slopes

Cut and fill slopes shall be protected from erosion by construction of straw bale dikes, silt fences, diversion berms, or swales along the top of the slope.

Where drainage must be carried down the slopes, pipe drains, concrete flumes, riprap chutes, or other impervious areas must be provided. Suitable erosion control measures such as riprap stilling basins, must be provided at the bottom of the slope.

Diversions shall be maintained until permanent growth is firmly established on the slopes.

Typical diversion details are shown in Figure 29. Riprap chute details are shown in Figure 30.

3. Channels and Swales.

Permanent channels and swales shall be provided with a stabilized invert, as provided in Section 8.

4. Storm Sewer and Culvert Outlets

Erosion protection shall be provided at storm sewer and culvert outlets as provided in Section 7.

5. Ditch Checks

Straw bale ditch checks have proven to be generally ineffective due to improper installation and inability of bales to withstand the force of concentrated flow of water. Ditches, channels, and swales should be stabilized as soon as possible after grading by lining with erosion control blanket, sod, or installing permanent linings as described in Section 8.

Where ditches, channels, or swales cannot be stabilized within thirty (30) days after grading, rock check dams or sand bag check dams must be provided. Rock check dams may be used in ditches with a design water depth of up to two feet (2') for the 2-year storm. Sand bag check dams may be used in ditches with a design water depth of up to one foot (1') for the 2-year storm. Rock check dams are shown in Figure 31. Sand bag check dams are shown in Figure 32.

14.5.d Temporary Construction Entrance

A minimum of one (1) temporary construction entrance is required at each site. Additional temporary entrances may be provided if approved. The location of each construction entrance shall be shown on the SECP.

Only construction entrances designated on the sediment and erosion control plan may be used. Barricades shall be maintained if necessary to prevent access at other points until construction is complete.

Construction entrances shall be constructed of one and one-half inches (1 ½") clean crushed limestone and shall be a minimum of twenty-five feet (25') wide and fifty (50') feet long. Minimum thickness of crushed limestone surface shall be six inches (6"). Additional two inch (2") lifts of crushed limestone shall be added at the discretion of the City if the surface of the initial drive deteriorates or becomes too muddy to be effective.

In locations where an existing drive or street extends at least fifty feet (50') into the site, the existing drive may be designated as the construction entrance, and construction of a new gravel entrance is not required, unless job conditions warrant.

A permit must be obtained from the Neosho Public Works Department for temporary construction entrances on City roads. A permit must be obtained from the Missouri Department of Transportation (MODOT) whenever the entrance is located on State right-of-way.

14.5.e Cleaning Streets

Streets, both interior and adjacent to the site, shall be cleaned of sediment after each rainfall of one-half inch (½") or more and at the end of construction and prior to release of escrow.

14.5.f Dust Control

The contractor will be required to use water trucks to wet haul roads and construction areas to minimize dust leaving the site when conditions warrant.

14.5.h Sequencing and Scheduling

Costs of sediment and erosion control can be minimized if proper consideration is given to sequencing and scheduling construction.

Any special sequencing and scheduling considerations must be noted on the SECP. The contractor must provide a sequence of construction activities as a part of the SWPPP.

Rainfall Intensity-Duration-Frequency, Joplin, Missouri						
Duration Hr:Min	Annual Probability, Percent					
	1	2	4	10	20	50
	Rainfall Intensity, Inches per Hour					
00:05	10.20	9.30	8.41	7.25	6.47	5.39
00:06	9.82	8.97	8.09	7.01	6.23	5.19
00:07	9.48	8.68	7.79	6.75	6.00	5.02
00:08	9.16	8.35	7.49	6.51	5.79	4.84
00:09	8.83	8.07	7.26	6.28	5.59	4.66
00:10	8.53	7.79	7.03	6.06	5.40	4.51
00:11	8.24	7.52	6.77	5.86	5.22	4.35
00:12	7.97	7.26	6.55	5.66	5.05	4.22
00:13	7.71	7.03	6.36	5.49	4.90	4.08
00:14	7.48	6.82	6.16	5.32	4.75	3.96
00:15	7.27	6.63	5.96	5.16	4.61	3.83
00:16	7.10	6.49	5.86	5.05	4.49	3.73
00:17	6.96	6.34	5.72	4.92	4.37	3.64
00:18	6.82	6.23	5.61	4.84	4.29	3.54
00:19	6.72	6.14	5.51	4.74	4.20	3.46
00:20	6.62	6.04	5.40	4.67	4.11	3.38
00:21	6.52	5.96	5.31	4.59	4.04	3.30
00:22	6.44	5.87	5.23	4.52	3.97	3.22
00:23	6.36	5.79	5.16	4.48	3.92	3.15
00:24	6.28	5.74	5.09	4.41	3.84	3.09
00:25	6.20	5.66	5.00	4.35	3.79	3.01
00:26	6.14	5.61	4.95	4.31	3.73	2.95
00:27	6.07	5.54	4.89	4.25	3.68	2.91
00:28	5.99	5.49	4.82	4.21	3.62	2.84
00:29	5.94	5.41	4.77	4.16	3.57	2.79
00:30	5.88	5.37	4.72	4.10	3.52	2.74
00:35	5.54	5.08	4.42	3.88	3.29	2.51
00:40	5.22	4.78	4.14	3.64	3.08	2.32
00:45	4.91	4.50	3.89	3.42	2.86	2.13
00:50	4.61	4.20	3.64	3.20	2.67	1.99
00:55	4.32	3.95	3.42	3.00	2.52	1.86
01:00	4.11	3.75	3.25	2.86	2.38	1.80



**CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA**

**RAINFALL DATA TABLE
INTENSITY-DURATION-FREQUENCY**

TABLE A

Rainfall Depth-Duration-Frequency, Joplin, Missouri						
Duration Hr:Min	Annual Probability, Percent					
	1	2	4	10	20	50
	Rainfall Depth, Inches					
1:00	4.10	3.73	3.27	2.87	2.40	1.80
1:15	4.42	4.00	3.48	3.01	2.50	1.91
1:30	4.68	4.22	3.70	3.19	2.60	2.00
1:45	4.87	4.39	3.87	3.32	2.70	2.10
2:00	5.01	4.55	4.06	3.45	2.82	2.19
2:15	5.21	4.69	4.20	3.55	2.92	2.29
2:30	5.32	4.82	4.33	3.67	3.04	2.38
2:45	5.46	4.95	4.45	3.77	3.14	2.47
3:00	5.54	5.05	4.56	3.85	3.26	2.54
3:30	5.73	5.25	4.69	3.98	3.41	2.66
4:00	5.88	5.44	4.80	4.06	3.51	2.74
4:30	6.04	5.62	4.87	4.13	3.61	2.79
5:00	6.19	5.79	4.94	4.20	3.69	2.85
5:30	6.32	5.92	4.99	4.25	3.75	2.87
6:00	6.45	6.06	5.04	4.30	3.79	2.91
7:00	6.72	6.27	5.18	4.41	3.90	2.96
8:00	6.99	6.44	5.35	4.53	4.02	3.02
9:00	7.28	6.61	5.53	4.66	4.11	3.12
10:00	7.55	6.75	5.70	4.80	4.20	3.17
11:00	7.79	6.87	5.88	4.94	4.27	3.23
12:00	8.01	7.02	6.03	5.05	4.35	3.30
15:00	8.44	7.31	6.40	5.35	4.55	3.48
18:00	8.74	7.60	6.66	5.60	4.72	3.65
21:00	8.96	7.86	6.90	5.82	4.88	3.82
24:00	9.08	8.05	7.06	6.01	5.01	3.96

Source: Bulletin 71, Rainfall Frequency Atlas of the Midwest, Huff and Angel, 1992
National Weather Service Hydro 35, Five- to 60-Minute Precipitation Frequency for the
Eastern and Central United States, 1977.



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

RAINFALL DATA TABLE
DEPTH-DURATION-FREQUENCY

TABLE A, Continued

Huff's Median Time Distributions of Heavy Storm Rainfall. Cumulative storm rainfall (%) versus cumulative storm time (%). Source: *Rainfall Frequency Atlas of the Midwest*, F.A. Huff and J. R. Angel, Midwestern Climate Center, 1992.

Cum % of storm time	Point Rainfall				Cum % of storm time	10 to 50 Square Miles				Cum % of storm time	50 to 400 Square Miles				Cum % of storm time
	Quartile					Quartile					Quartile				
	1st	2nd	3rd	4th		1st	2nd	3rd	4th		1st	2nd	3rd	4th	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	16	3	3	2	5	12	3	2	2	5	8	2	2	2	5
10	33	8	6	5	10	25	6	5	4	10	17	4	4	3	10
15	43	12	9	8	15	38	10	8	7	15	34	8	7	5	15
20	52	16	12	10	20	51	14	12	9	20	50	12	10	7	20
25	60	22	15	13	25	62	21	14	11	25	63	21	12	9	25
30	66	29	19	16	30	69	30	17	13	30	71	31	14	10	30
35	71	39	23	19	35	74	40	20	15	35	76	42	16	12	35
40	75	51	27	22	40	78	52	23	18	40	80	53	19	14	40
45	79	62	32	25	45	81	63	27	21	45	83	64	22	16	45
50	82	70	38	28	50	84	72	33	24	50	86	73	29	19	50
55	84	76	45	32	55	86	78	42	27	55	88	80	39	21	55
60	86	81	57	35	60	88	83	55	30	60	90	86	54	25	60
65	88	85	70	39	65	90	87	69	34	65	92	89	68	29	65
70	90	88	79	45	70	92	90	79	40	70	93	92	79	35	70
75	92	91	85	51	75	94	92	86	47	75	95	94	87	43	75
80	94	93	89	59	80	95	94	91	57	80	96	96	92	54	80
85	96	95	92	72	85	96	96	94	74	85	97	97	95	75	85
90	97	97	95	84	90	97	97	96	88	90	98	98	97	92	90
95	98	98	97	92	95	98	98	98	95	95	99	99	99	97	95
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100



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STORMWATER MANAGEMENT
CRITERIA

HUFF 'S QUARTILE
RAINFALL DISTRBTIONS

TABLE B

SURFACE RUNOFF COEFFICIENTS

LAND USE	PROPORTIONAL SURFACE CONDITION		RATIONAL METHOD "C"
	IMPERV.	TURF OR =	
Residential Low-Medium Density (Single Family & Duplex)	0.35	0.65	0.44
Residential Medium-high Density (6 or fewer D.U. per bldg. and mobile home parks)	0.60	0.40	0.62
Residential High Density (Over 6 D.U. per bldg.)	0.80	0.20	0.76
Public/Semi-Public (Schools, Gov't., Institutional)	0.65	0.35	0.66
Commercial/Industrial; Office Parks	0.70	0.30	0.69
Neighborhood Commercial	0.85	0.15	0.80
General Commercial (Shopping Centers)	0.95	0.05	0.87
Central Business District	1.00	0.00	0.90
Industrial	0.80	0.20	0.76
Open Space, Parks, Golf Courses	0.10	0.90	0.27
Agricultural/Cultivated	0.05	0.95	0.24
All Land Uses:			
100 % Impervious Surfaces			0.90
100 % Pervious Surfaces (With maintained turf cover or =)			0.20

Ref: SCS, APWA (3/90)



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SURFACE RUNOFF
COEFFICIENTS

TABLE C

Runoff Curve Numbers (Average Watershed Conditions, $I_a = 0.2S$)

Land Use Description	Curve Numbers for Hydrologic Soil Group			
	A	B	C	D
Fully developed urban areas ^a (vegetation established)				
Lawns, open spaces, parks, golf courses, cemeteries, etc.				
Good condition; grass cover on 75% or more of the area	39	61	74	80
Fair condition; grass cover on 50% to 75% of the area	49	69	79	84
Poor condition; grass cover on 50% or less the area	68	79	86	89
Paved parking lots, roofs, driveways, etc.	98	98	98	98
Streets and roads				
Paved with curbs and storm sewers	98	98	98	98
Gravel	76	85	89	91
Dirt	72	82	87	89
Paved with open ditches	83	89	92	93
	Average % Impervious ^b			
Industrial, commercial and business areas	85	89	92	94
	80	86	91	93
	75	83	89	92
	70	80	87	91
Row houses, town houses, and residential	65	77	85	90
with lot sizes 1/8 acre or less				
Residential: average lot size				
1/4 acre	38	61	75	83
	30	57	72	81
	25	54	70	80
	20	51	68	79
	12	46	65	77
Developing urban areas ^c (no vegetation established)				
Newly graded area	77	86	91	94



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

Runoff Curve Numbers						
Land Use Description	Hydrologic Condition	Curve Numbers for Hydrologic Soil Group				
		A	B	C	D	
Meadow	-	30	58	71	78	
Forestland-grass or	Poor	55	73	82	86	
orchards -evergreen or	Fair	44	65	76	82	
Deciduous	Good	32	58	72	79	
Brush	Poor	48	67	77	83	
	Good	20	48	65	73	
Woods	Poor	45	66	77	83	
	Fair	36	60	73	79	
	Good	25	55	70	77	
Farmsteads	-	59	74	82	86	
Forest-Range						
Herbaceous	Poor	-	79	86	92	
	Fair	-	71	80	89	
	Good		61	74	84	
Land use	Treatment of Practice	Hydrologic Condition	A	B	C	D
Cultivated agricultural land						
Fallow	Straight row	-	77	86	91	94
	Conservation tillage	Poor	76	85	90	93
	Conservation tillage	Good	74	83	88	90
Row crops	Straight row	Poor	72	81	88	91
	Straight row	Good	67	78	85	89
	Conservation tillage	Poor	71	80	87	90
	Conservation tillage	Good	64	75	82	85



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

Land use	Treatment of Practice	Hydrologic Condition	A	B	C	D
Row crops	Contoured	Poor	70	79	84	88
	Contoured	Good	65	75	82	86
	Contoured and	Poor	69	78	83	87
	conservation tillage	Good	64	74	81	85
	Contoured and terraces	Poor	66	74	80	82
	Contoured and terraces	Good	62	71	78	81
	Contoured and terraces and	Poor	65	73	79	81
	conservation tillage	Good	61	70	77	80
Small grain	Straight row	Poor	65	76	84	88
	Straight row	Good	63	75	83	87
	Conservation tillage	Poor	64	75	83	86
	Conservation tillage	Good	60	72	80	84
	Contoured	Poor	63	74	82	85
	Contoured	Good	61	73	81	84
	Contoured and	Poor	62	73	81	84
	conservation tillage	Good	60	72	80	83
	Contoured and terraces	Poor	61	72	79	82
	Contoured and terraces	Good	59	70	78	81
	Contoured and terraces and	Poor	60	71	78	81
	conservation tillage	Good	58	69	77	80
Close-seeded legumes or rotation meadow ^c	Straight row	Poor	66	77	85	89
	Straight row	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	Contoured	Good	55	69	78	83
	Contoured and terraces	Poor	63	73	80	83
	Contoured and terraces	Good	51	67	76	80



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

Land use	Treatment of Practice	Hydrologic Condition	A	B	C	D
Noncultivated	No mechanical treatment	Poor	68	79	86	89
agricultural land	No mechanical treatment	Fair	49	69	79	84
pasture or range	No mechanical treatment	Good	39	61	74	80
	Contoured	Poor	47	67	81	88
	Contoured	Fair	25	59	75	83
	Contoured	Good	6	35	70	79

^a For land uses with impervious areas, curve numbers are computed assuming that 100% of runoff from impervious areas is directly connected to the drainage system. Pervious areas (lawn) are considered to be equivalent to lawns in good condition and the impervious areas have a *CN* of 98.

^b Includes paved streets.

^c Use for the design of temporary measures during grading and construction. Impervious area percent for urban areas under development vary considerably. The user will determine the percent impervious. Then using the newly graded area *CN* and Figure 8.7.1a or b, the composite *CN* can be computed for any degree of development.

^d For conservation tillage poor hydrologic condition, 5% to 20% of the surface is covered with residue (less than 750-lb/acre row crops or 300-lb/acre small grain).

For conservation tillage good hydrologic condition, more than 20% of the surface is covered with residue (greater than 750-lb/acre row crops or 300-lb/acre small grain).

^e Close-drilled or broadcast.

For noncultivated agricultural land:

Poor hydrologic condition has less than 25% ground cover density.

Fair hydrologic condition has between 25% and 50% ground cover density.

Good hydrologic condition has more than 50% ground cover density.

For forest-range:

Poor hydrologic condition has less than 30% ground cover density.

Fair hydrologic condition has between 30% and 70% ground cover density.

Good hydrologic condition has more than 70% ground cover density.

Source: U.S. Department of Agriculture Soil Conservation Service (1986).



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SURFACE RUNOFF
COEFFICIENTS

TABLE C, Continued

MANNING'S ROUGHNESS COEFFICIENTS ("n")

TYPE OF CHANNEL	n
Closed Conduits	
Reinforced Concrete Pipe	0.013
Reinforced Concrete Elliptical Pipe	0.013
Corrugated Metal Pipe:	
2-2/3 x 1/2 in Annular Corrugations unpaved -plain	0.024
2-2/3 x 1/2 in Annular Corrugations paved invert	0.021
3 x 1 in Annular Corrugations unpaved - plain	0.027
3 x 1 in Annular Corrugations paved invert	0.023
6 x 2 in Corrugations unpaved - plain	0.033
6 x 2 Corrugations paved invert	0.028
Vitrified Clay Pipe	0.013
Asbestos Cement Pipe	0.012
Open Channels (Lined)	
Gabions	0.025
Concrete	
Trowel Finish	0.013
Float Finish	0.015
Unfinished	0.017
Concrete, bottom float finished, with sides of	
Dressed Stone	0.017
Random Stone	0.020
Cement Rubble Masonry	0.025
Dry Rubble or Riprap	0.030
Gravel bottom, side of	
Random Stone	0.023
Riprap	0.030
Grass (Sod)	0.035
Open Channels (Unlimited) Excavated or Dredged	
Earth, straight and uniform	0.027
Earth, winding and sluggish	0.035
Natural Stream	
Clean stream, straight	0.030
Stream with pools, sluggish reaches, heavy underbrush	0.100
Flood Plains	
Grass, no brush	0.030
With some brush	0.090
Street Curbing	0.014

Ref: APWA (3/90)



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MANNING' S ROUGHNESS
COEFFICIENTS (n)

TABLE F

HEAD LOSS COEFFICIENTS (k) FOR HYDRAULIC CALCULATIONS

CONDITIONS	k
Manhole, junction boxes and inlets with shaped inverts:	
Thru Flow	0.15
Junction	0.4
Contraction Transition	0.1
Expansion Transition	0.2
90 degree bend	0.4
45 degree and less bends	0.3
Culvert outlet	1.0
Culvert inlets:	
Pipe, Concrete	
Projecting from fill, socket end (grooved end)	0.2
Projecting from fill, sq cut end	0.5
Headwall or headwall and wingwalls	
Socket end of pipe (grooved end)	0.2
Square edge	0.5
Round (radius = 1/12D)	0.2
Mitered to conform to fill slope	0.7
Standard end section	0.5
Beveled edges, 33.7° or 45° bevels	0.2
Side-or-slope-tapered inlet	0.2
Pipe, or Pipe-Arch, corrugated Metal	
Projecting from fill (not headwall)	0.9
Headwall or headwall and wingwalls square edge	0.5
Mitered to conform to fill slope, paved	
or unpaved slope	0.7
Standard end section	0.5
Beveled edges, 33.7° or 45° bevels	0.2
Side-or-slope-tapered inlet	0.2
Box Reinforced Concrete	
Headwall parallel to embankment (no wingwalls)	
Square edge on 3 edges	0.5
Rounded on 3 edges to radius of 1/12 barrel	
dimension, or beveled edges on 3 sides	0.2
Wingwalls at 30° to 75° to barrel	
Square edged at crown	0.4
Crown edge rounded to radius of 1/12 barrel	
dimension, or beveled top edge	0.20
Wingwall at 10° to 25° to barrel	
Square edged at crown	0.5
Wingwalls parallel (extension of sides)	
Square edged at crown	0.7
Side-or-slope-tapered inlet	0.2

Ref: APWA (3/90)



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HEAD LOSS
COEFFICIENTS

TABLE G

CURB OPENING INLETS CAPACITY INSTALLED ON SLOPING GUTTERS

FLOW DEPTH @ CURB (FEET)	INLET INTERCEPTION CAPACITY IN CUBIC FEET PER SECOND (CFS)								
	INLET OPENING LENGTH IN FEET								
	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
0.05	0.14	0.17	0.20	0.22	0.24	0.25	0.27	0.28	0.28
0.10	0.33	0.41	0.48	0.54	0.60	0.66	0.71	0.77	0.81
0.15	0.55	0.67	0.79	0.91	1.02	1.13	1.23	1.33	1.43
0.20	0.78	0.96	1.14	1.31	1.48	1.65	1.81	1.96	2.11
0.25	1.03	1.27	1.51	1.75	1.98	2.20	2.42	2.64	2.85
0.30	1.29	1.60	1.91	2.21	2.51	2.80	3.09	3.37	3.65
0.35	1.58	1.96	2.33	2.70	3.07	3.43	3.79	4.14	4.49
0.40	1.87	2.33	2.78	3.22	3.66	4.10	4.53	4.95	5.37
0.45	2.18	2.72	3.24	3.77	4.29	4.80	5.31	5.81	6.31
0.50	2.51	3.12	3.73	4.34	4.93	5.53	6.12	6.70	7.28
0.55	2.85	3.55	4.24	4.93	5.61	6.29	6.96	7.63	8.29
0.60	3.20	3.98	4.76	5.54	6.31	7.07	7.83	8.59	9.34

INSTALLATION CRITERIA:

Gutter Depression At Inlet	= 4.0" (Minimum)
Clear Height Of Opening	= 6.0" (Minimum)
Capacity Reduction For Clogging	= 20 %

Ref: MoDOT

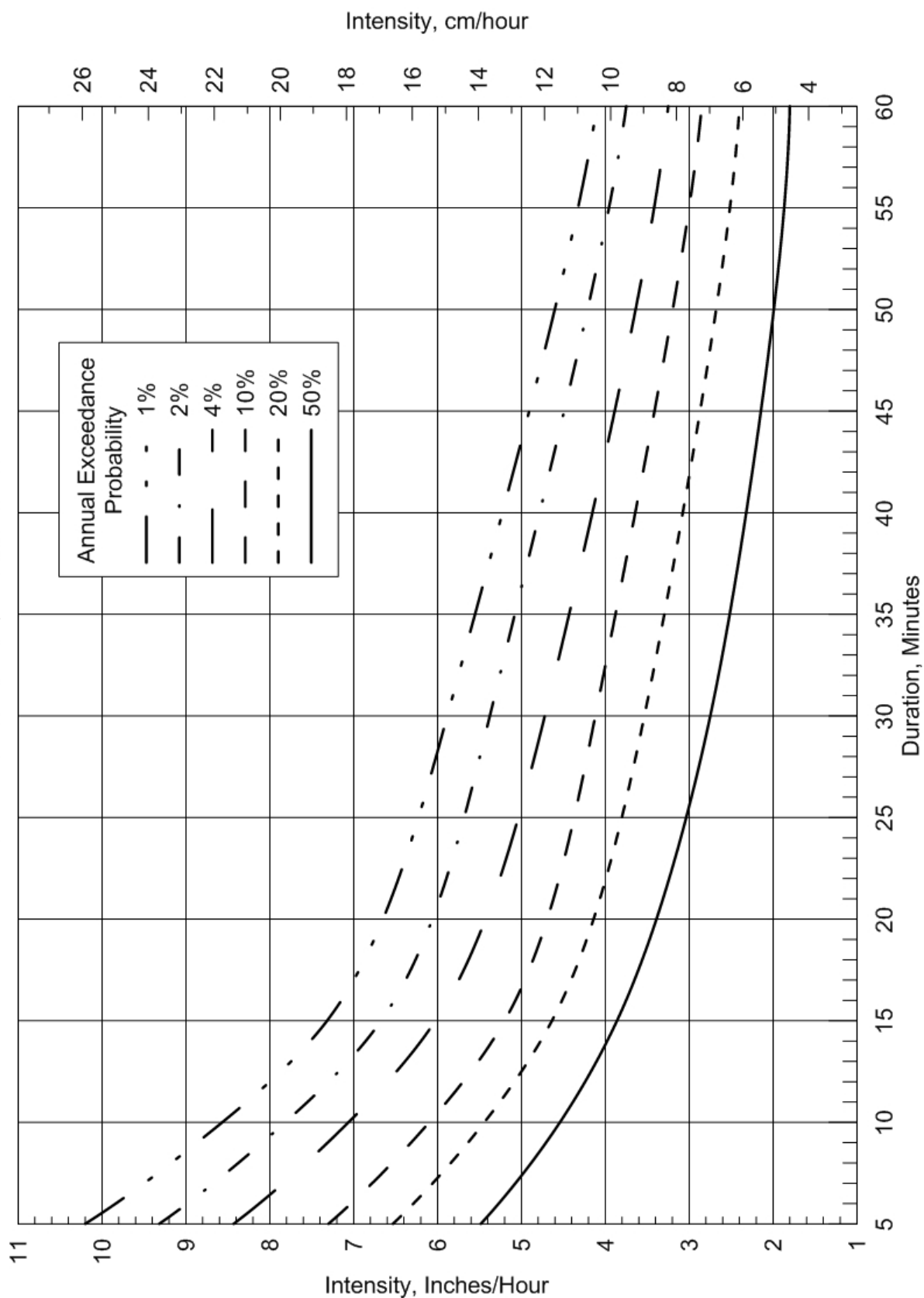


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CURB OPENING INLETS
CAPACITY ON GRADE

TABLE H

Rainfall Intensity-Duration-Frequency Carl Junction, Missouri

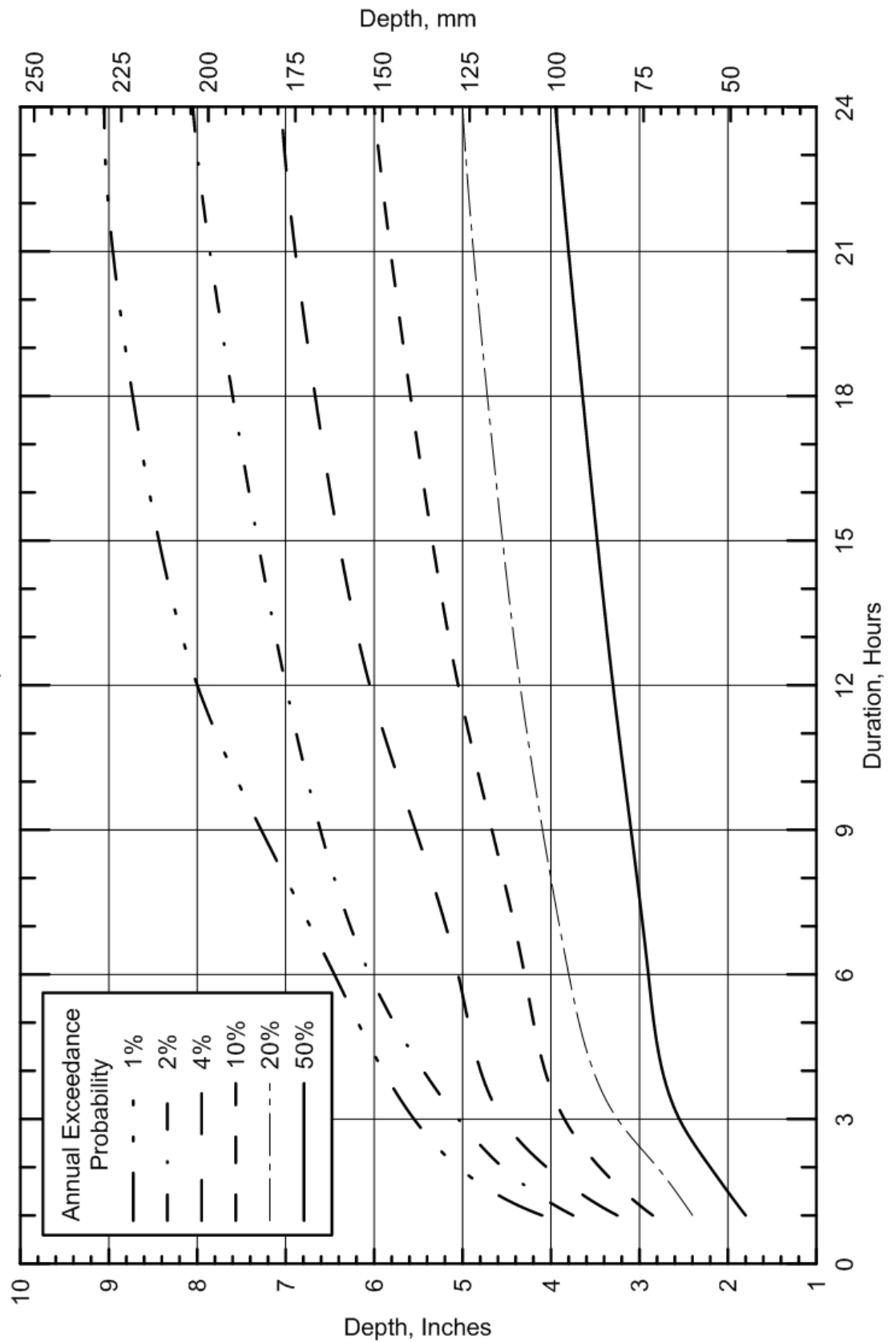


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RAINFALL
IDF CURVES

FIGURE 1

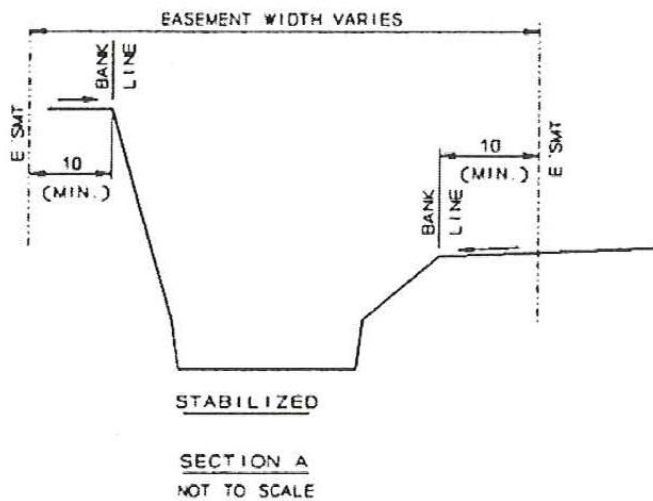
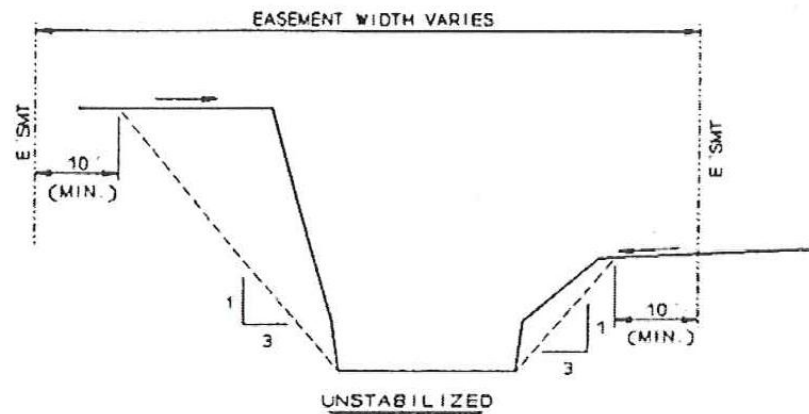
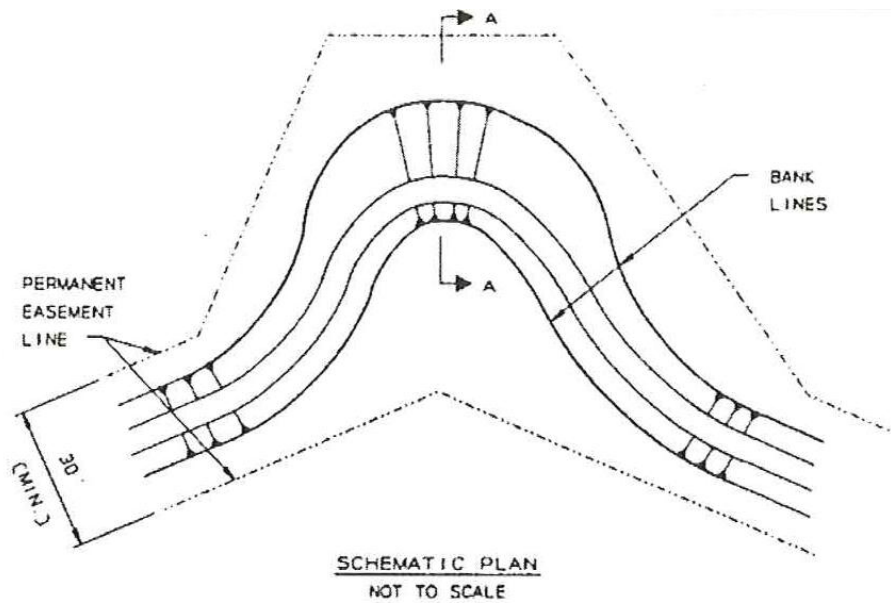
Rainfall Depth-Duration-Frequency Carl Junction, Missouri



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STORMWATER MANAGEMENT
CRITERIA

RAINFALL
DDF CURVES

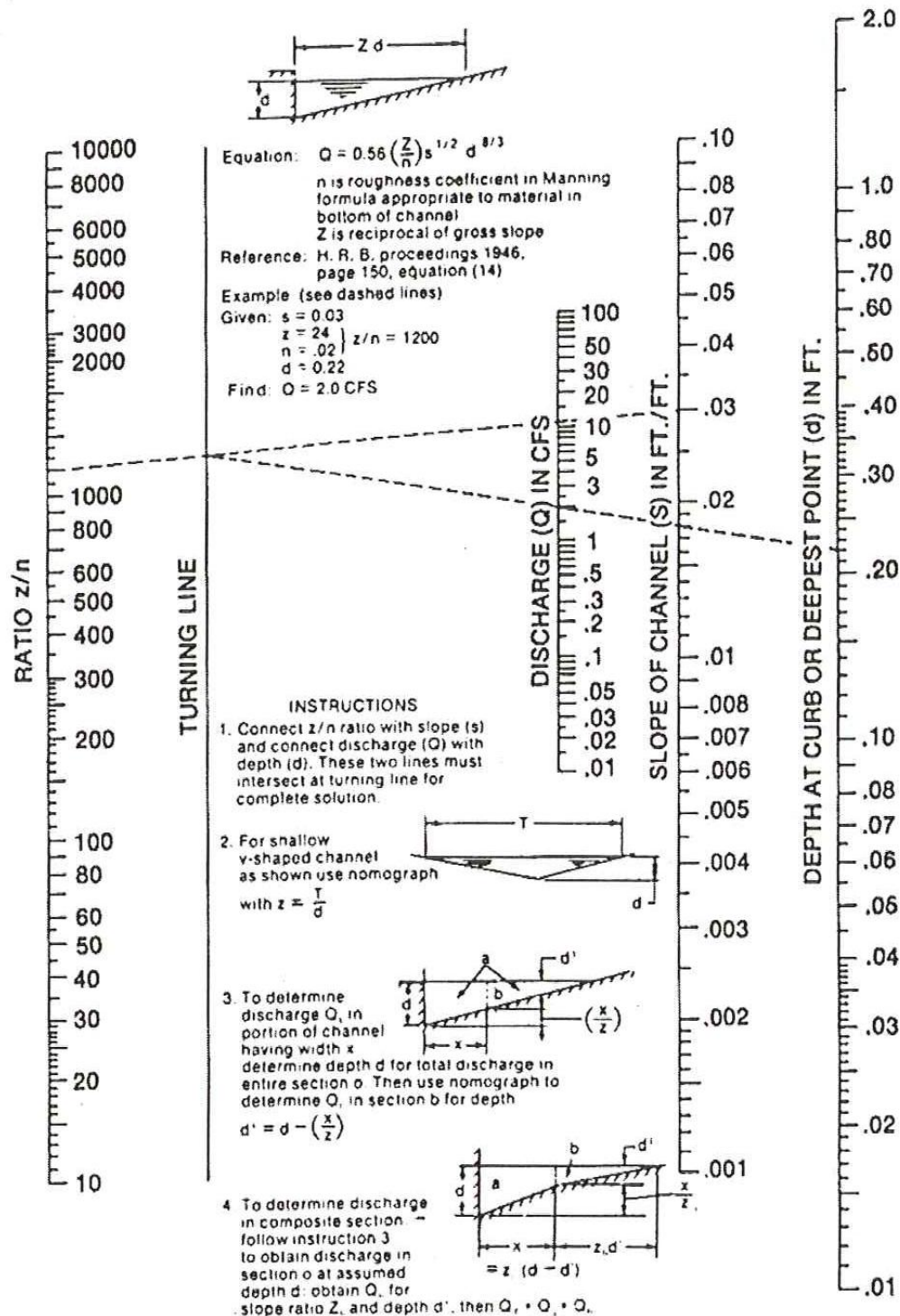
FIGURE 2



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PERMANENT EASEMENT
CHANNELS

FIGURE 3



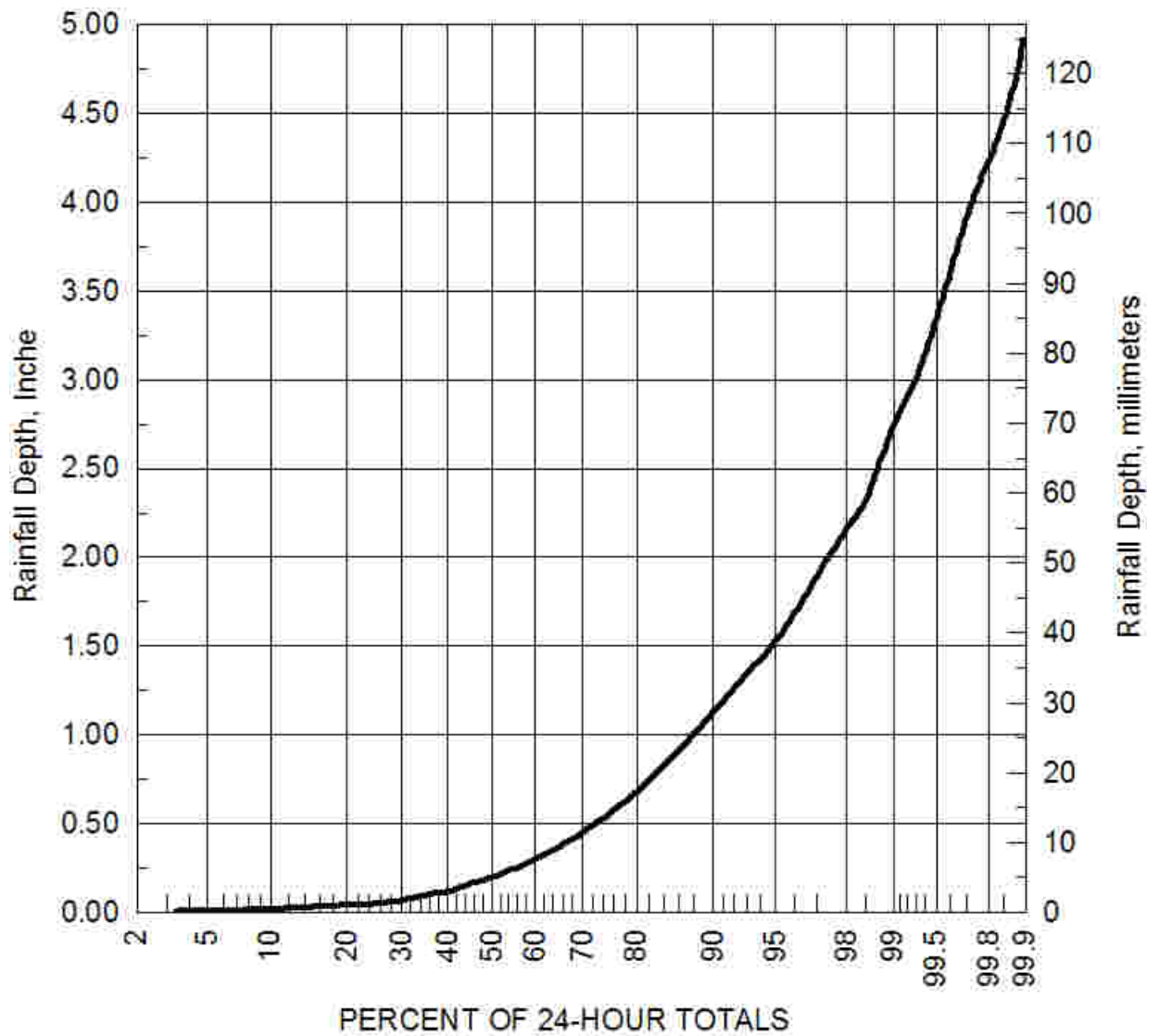
Ref: APWA (3/90)



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STREET GUTTER
 HYDRAULICS

FIGURE 4



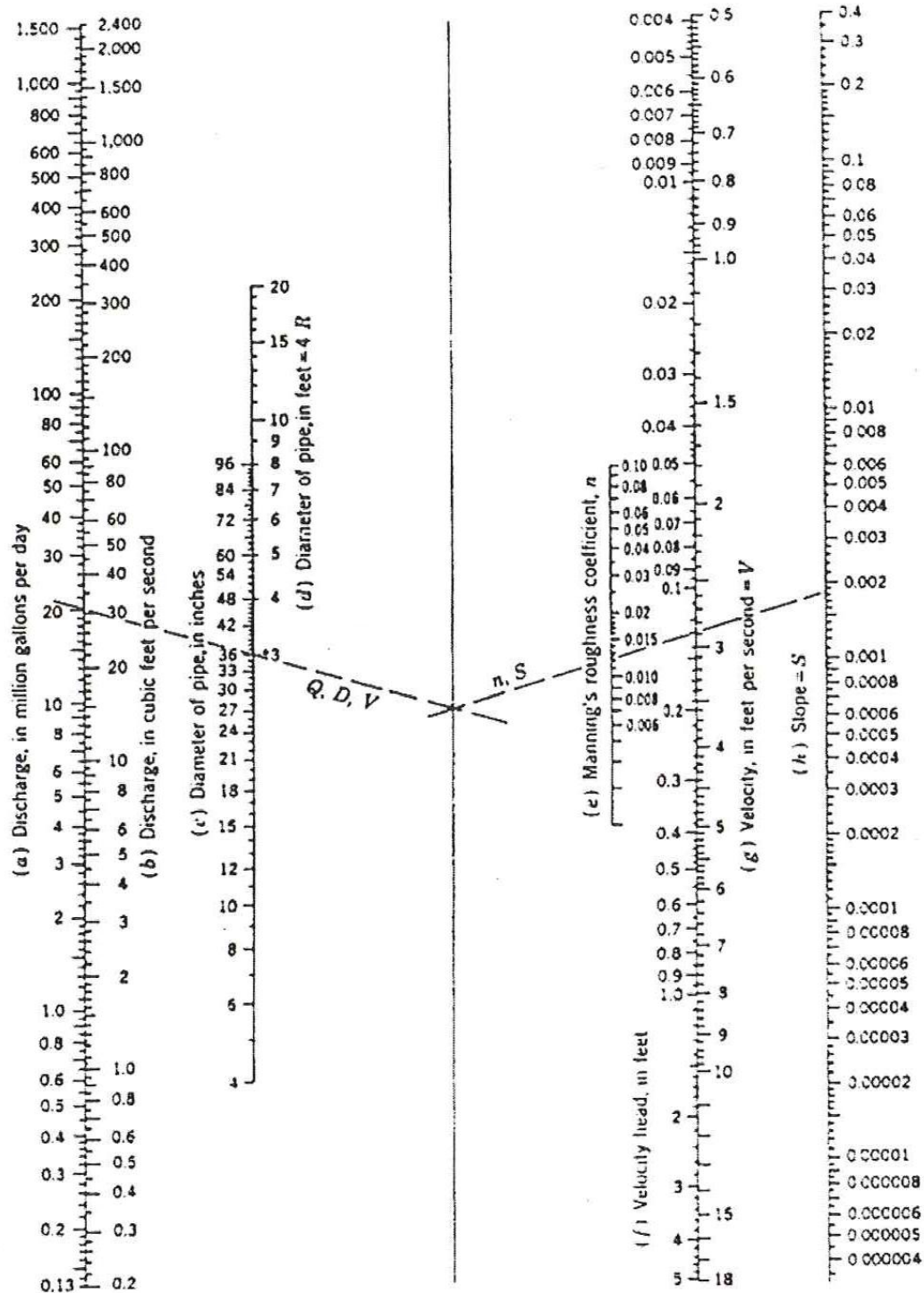
NATIONAL WEATHER SERVICE, HOURLY PRECIPITATION, JOPLIN, MISSOURI
 PERIOD OF RECORD July 1, 1948— December 31, 2006



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 CRITERIA

RAINFALL
 24-HOUR TOTALS

FIGURE 5



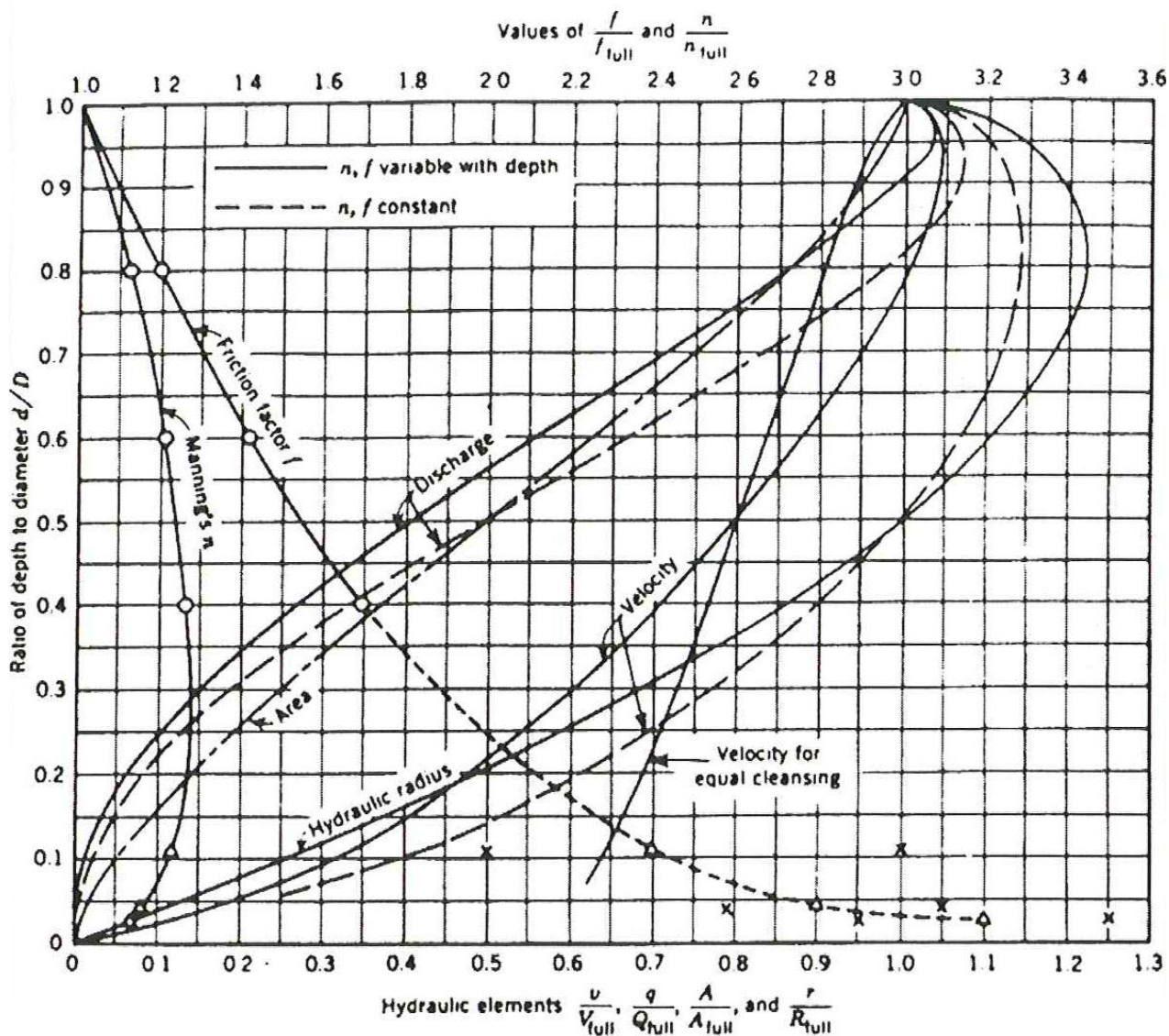
Ref: APWA (3/90)



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FLOW IN PIPES
MANNING' S FORMULA

FIGURE 7



v = Actual velocity of flow (fps)
 V_{full} = Velocity flowing full (fps)
 q = Actual quantity of flow (cfs)
 Q_{full} = Capacity flowing full (cfs)

A = Area occupied by flow (ft²)
 A_{full} = Area of pipe (ft²)
 r = Actual hydraulic radius (ft.)
 R_{full} = Hydraulic radius of full pipe (ft.)

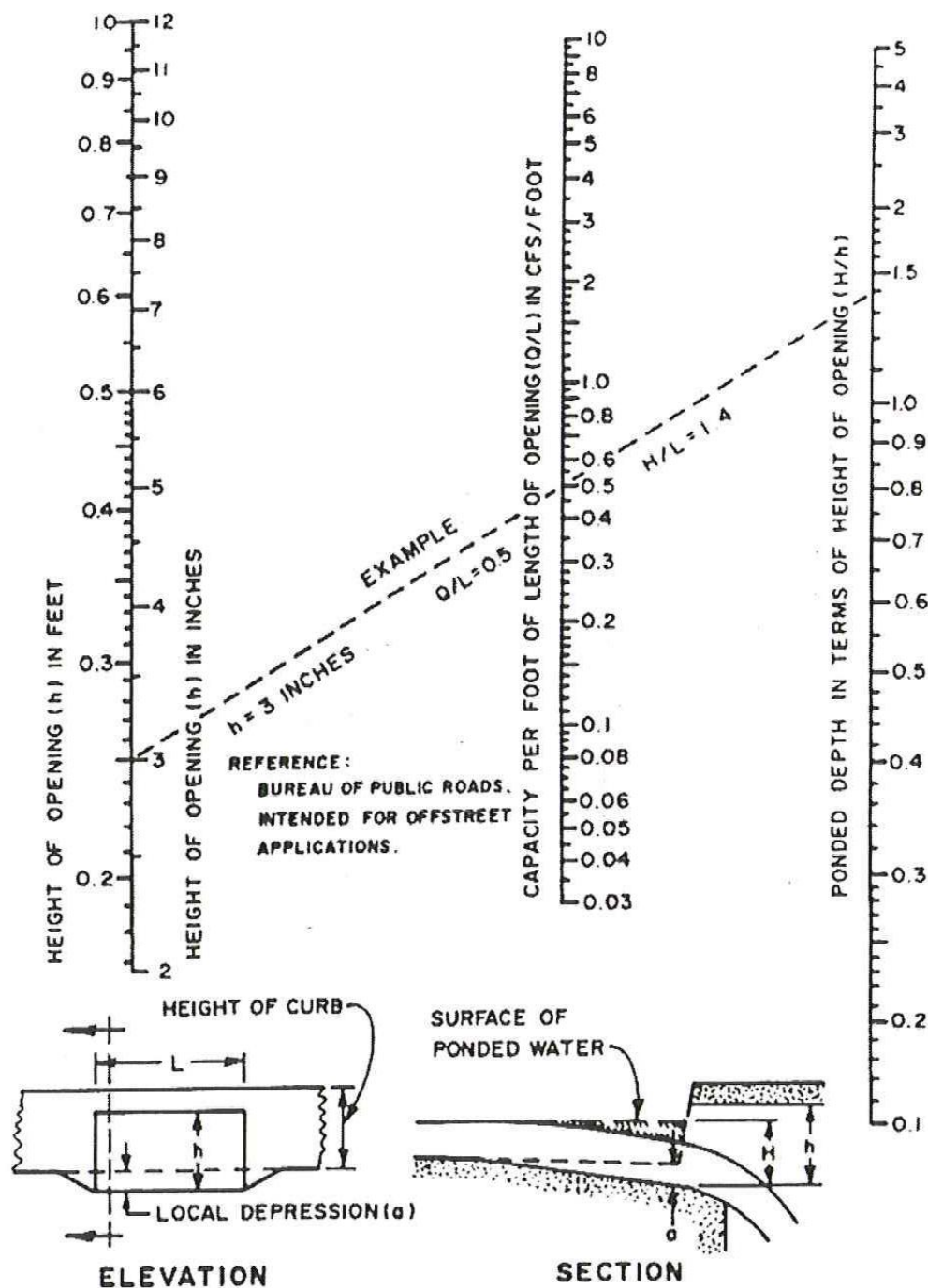
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HYDRAULIC ELEMENTS
CIRCULAR CONDUIT

FIGURE 8



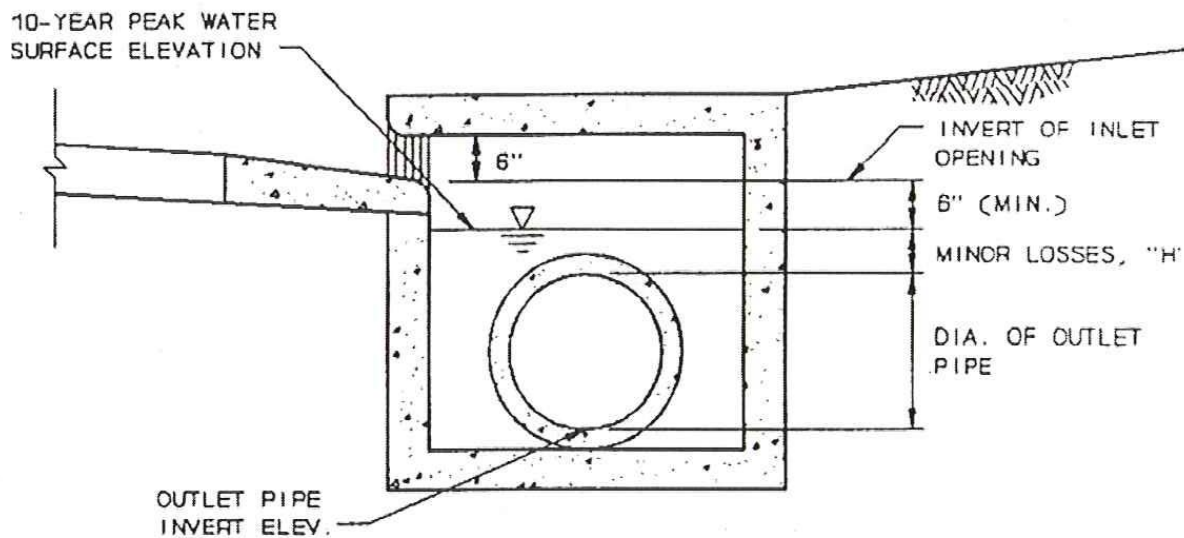
Ref: APWA (3/90)



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CURB OPENING INLETS
CAPACITY IN SUMP

FIGURE 9



$$H = K(V^2 / 2G)$$

NOTES:

1. SEE TABLE F FOR VALUES OF "K".
2. $V = Q/A$ WHERE
 Q = FLOW, IN CFS
 A = CROSS-SECTIONAL AREA OF OUTLET PIPE, IN SQ. FT.
3. $2G = 64.4$ FT. PER SEC. PER SEC.

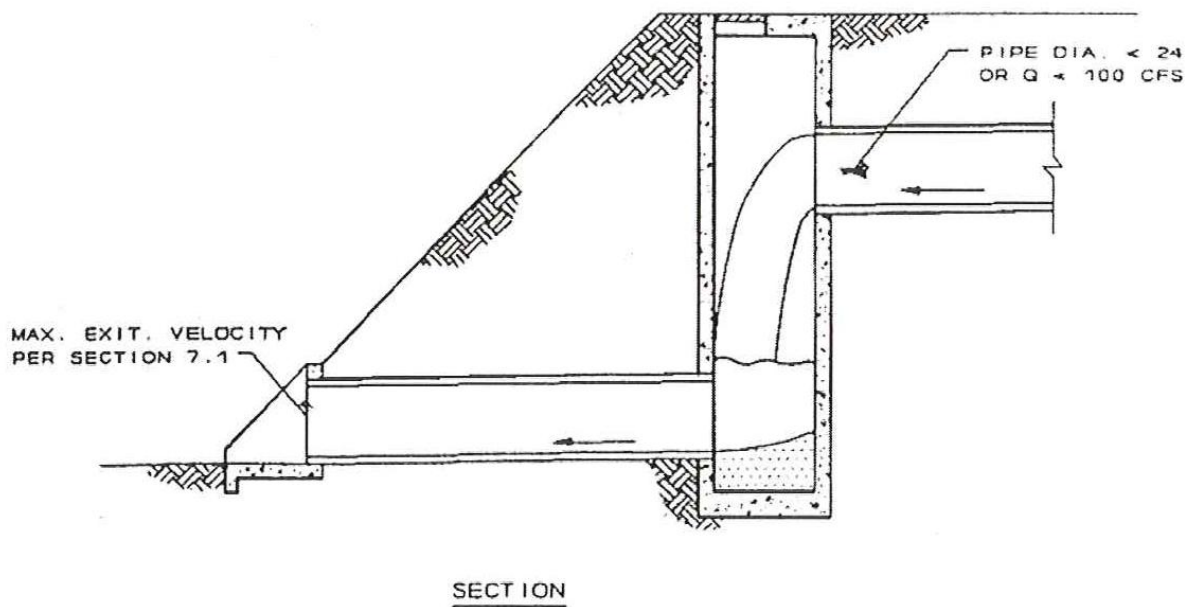
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CURB OPENING INLETS
DIMENSIONAL CRITERIA

FIGURE 10



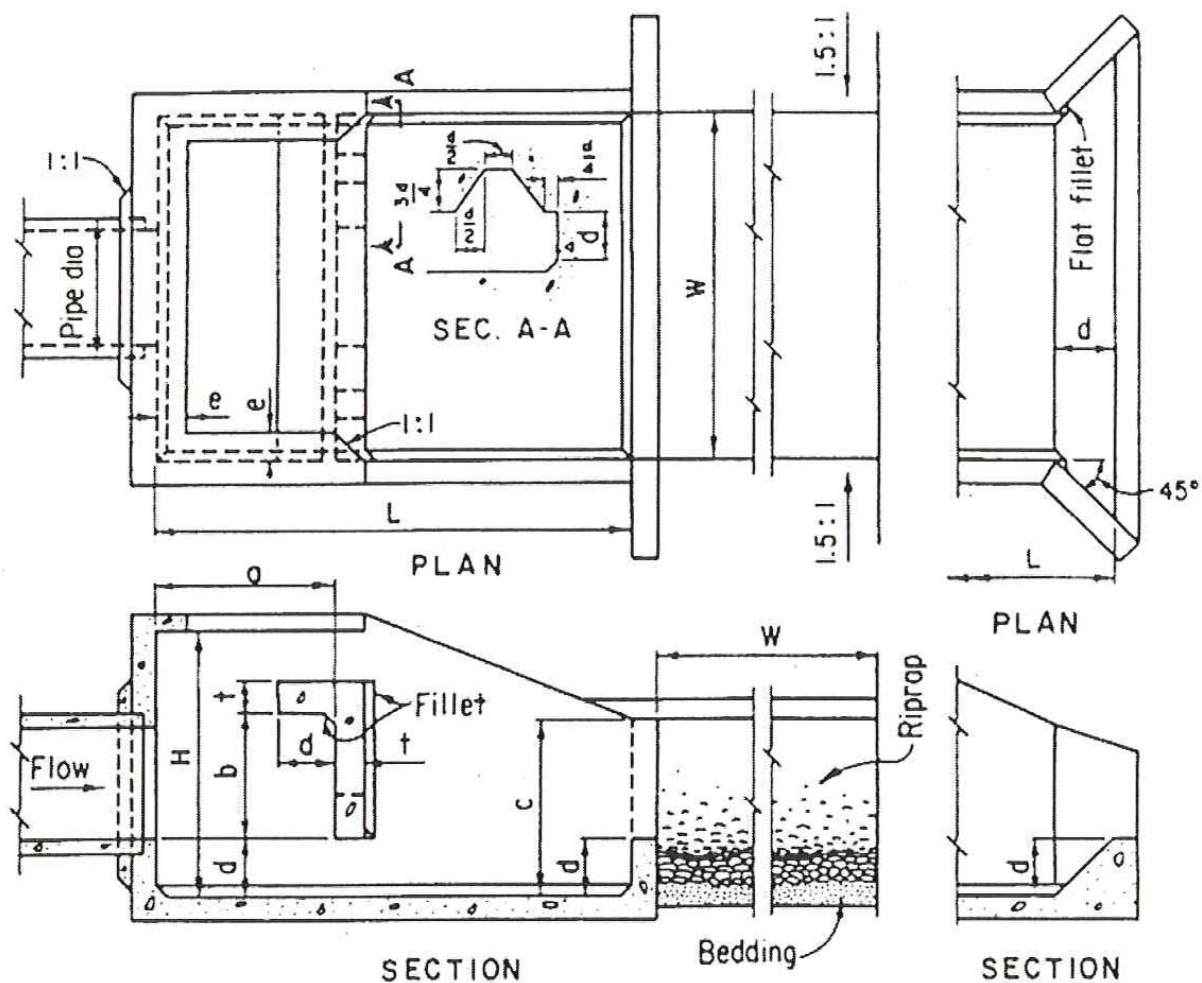
Ref: U.S. Bureau of Reclamation



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ENCLOSED DROP
ENERGY DISSIPATORS

FIGURE 11



$$\begin{aligned}
 H &= 3W/4 & c &= W/2 \\
 L &= 4W/3 & d &= W/6 \\
 a &= W/2 & e &= W/12 \\
 b &= 3W/8 & t &= W/12 \text{ suggested minimum thickness}
 \end{aligned}$$

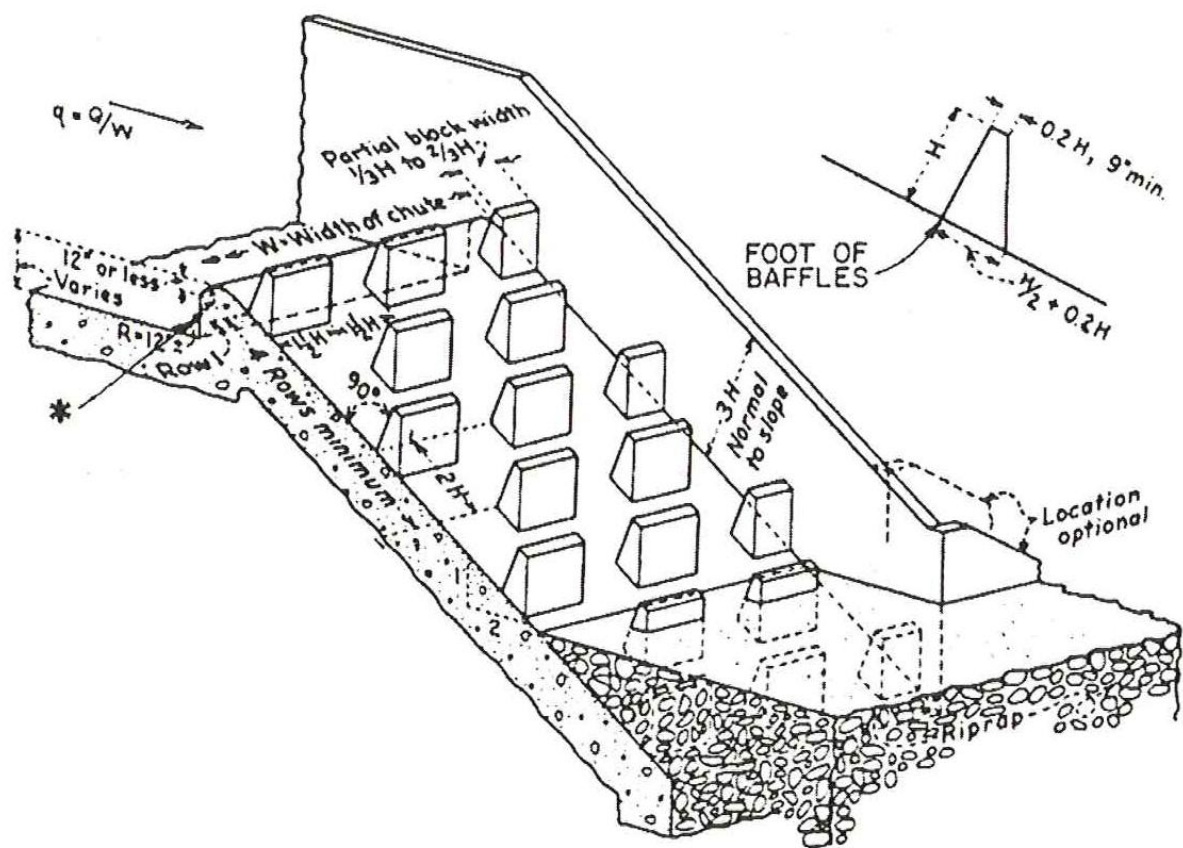
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BUREAU OF RECLAMATION
TYPE IV BASIN

FIGURE 12



* SILL IS REQUIRED WHERE ENTRANCE VELOCITY CANNOT BE CONTROLLED BY THE UPSTREAM CHANNEL CON-
STRICTION, BUT FOR GRASS-LINED CHANNEL THE SILL ELEVATION NEEDS TO BE THE SAME AS THE CHANNEL,
OTHERWISE UPSTREAM SILTATION WILL OCCUR.

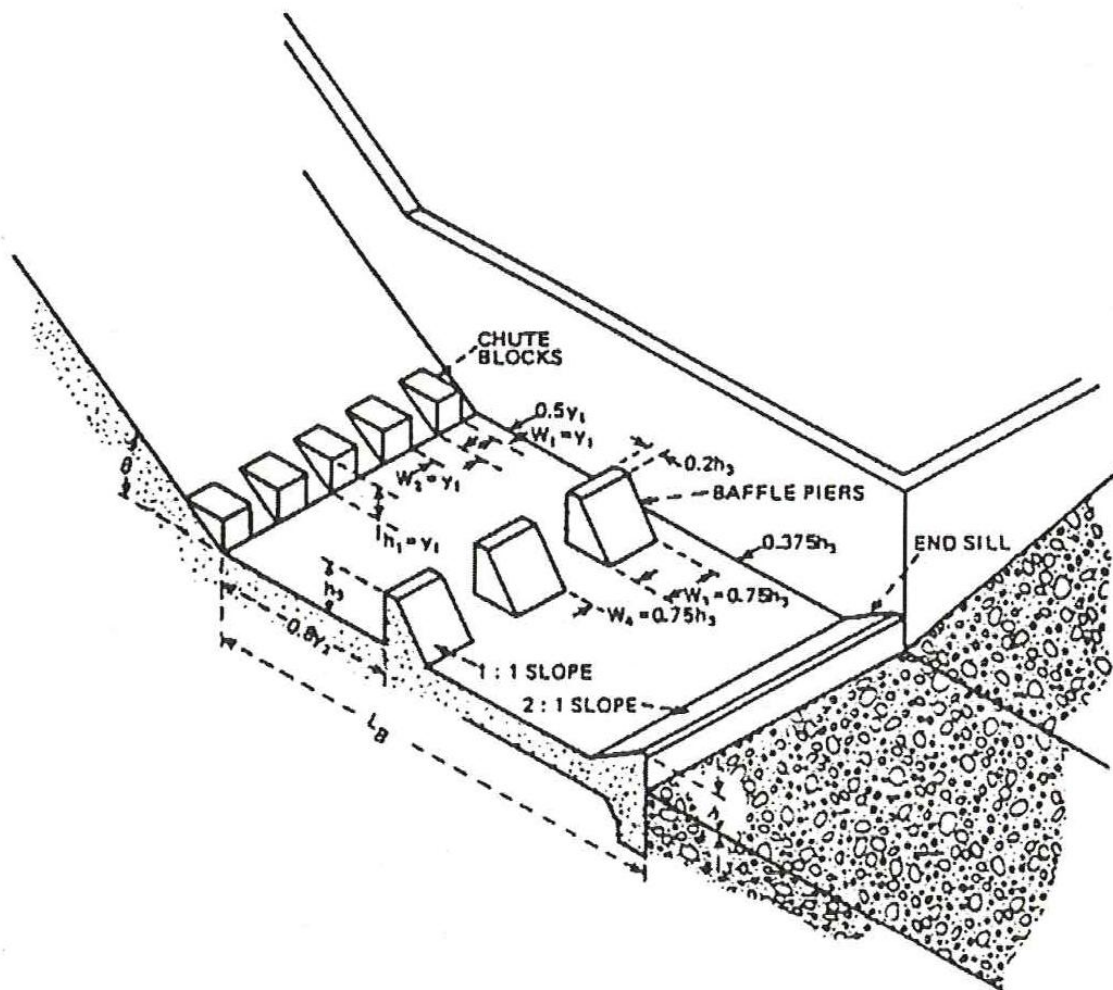
Ref: U.S. Bureau of Reclamation



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BUREAU OF RECLAMATION
TYPE IX BASIN

FIGURE 13



Ref: U.S. Bureau of Reclamation



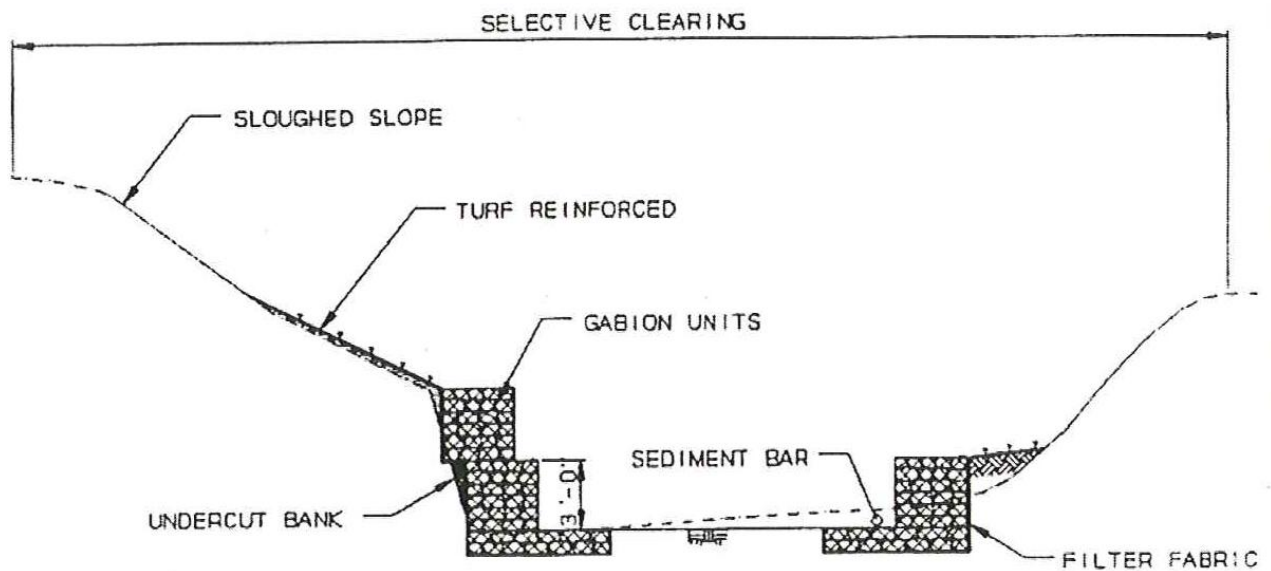
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STORMWATER MANAGEMENT
CRITERIA

BUREAU OF RECLAMATION
TYPE III BASIN

FIGURE 14

NOTES:

1. SELECTIVE CLEARING TO REMOVE DEADFALL, TREES WITH UNDERCUT ROOTS, AND BRUSH. SOUND TREES MAY REMAIN.
2. HEIGHT OF GABION STRUCTURE VARIES. CONSTRUCT TO APPX. EQUAL HEIGHT OF EXISTING VERTICAL BANK FACE.



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BANK STABILIZATION
FOR STREAM OR CHANNEL

FIGURE 15

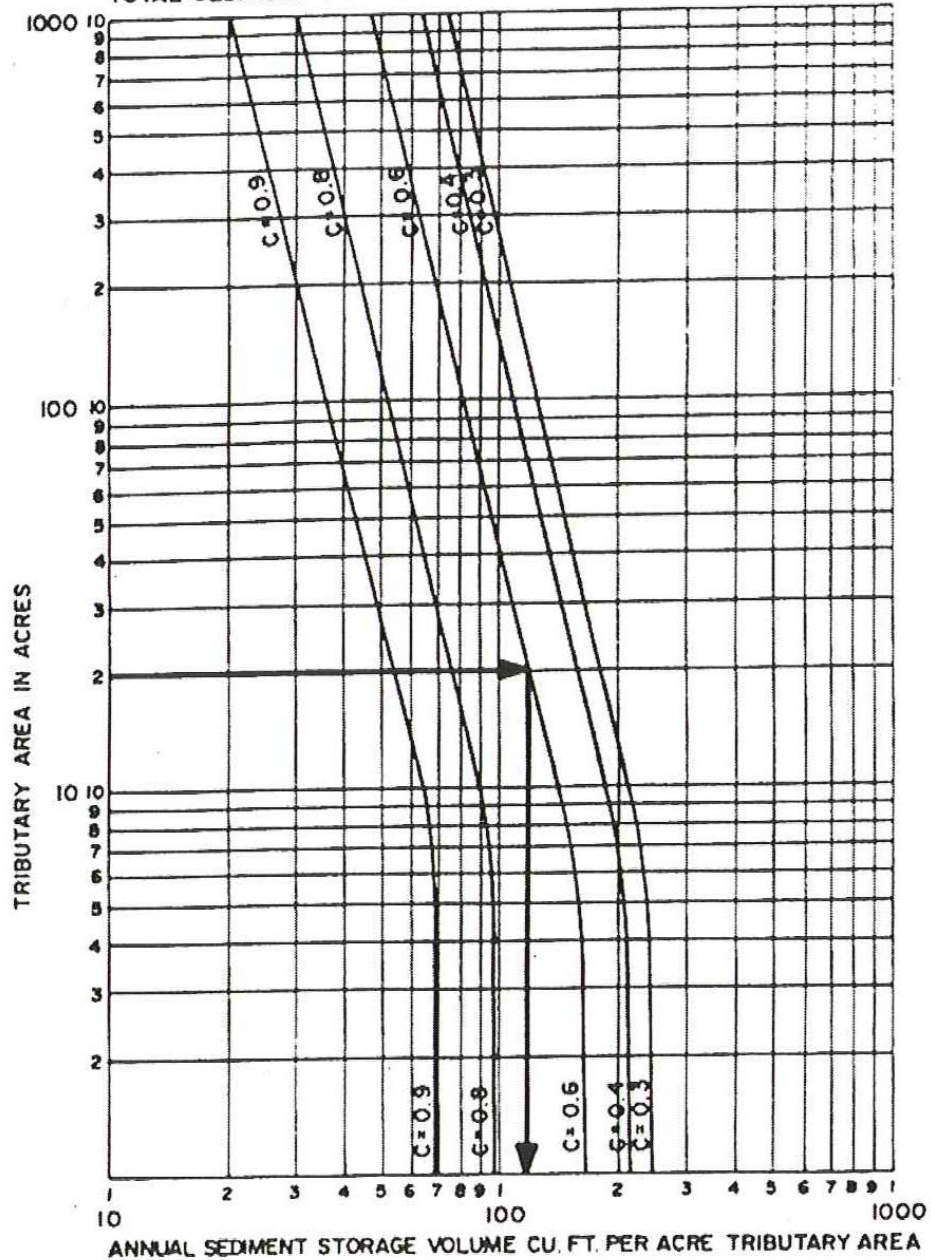
EXAMPLE:

TRIBUTARY AREA = 20 ACRES

RATIONAL METHOD RUNOFF COEFFICIENT "C" = 0.6

SEDIMENT STORAGE = 120 CU. FT. PER ACRE PER YEAR

TOTAL SEDIMENT STORAGE = 120 X 20 = 2400 CU. FT. PER YEAR.



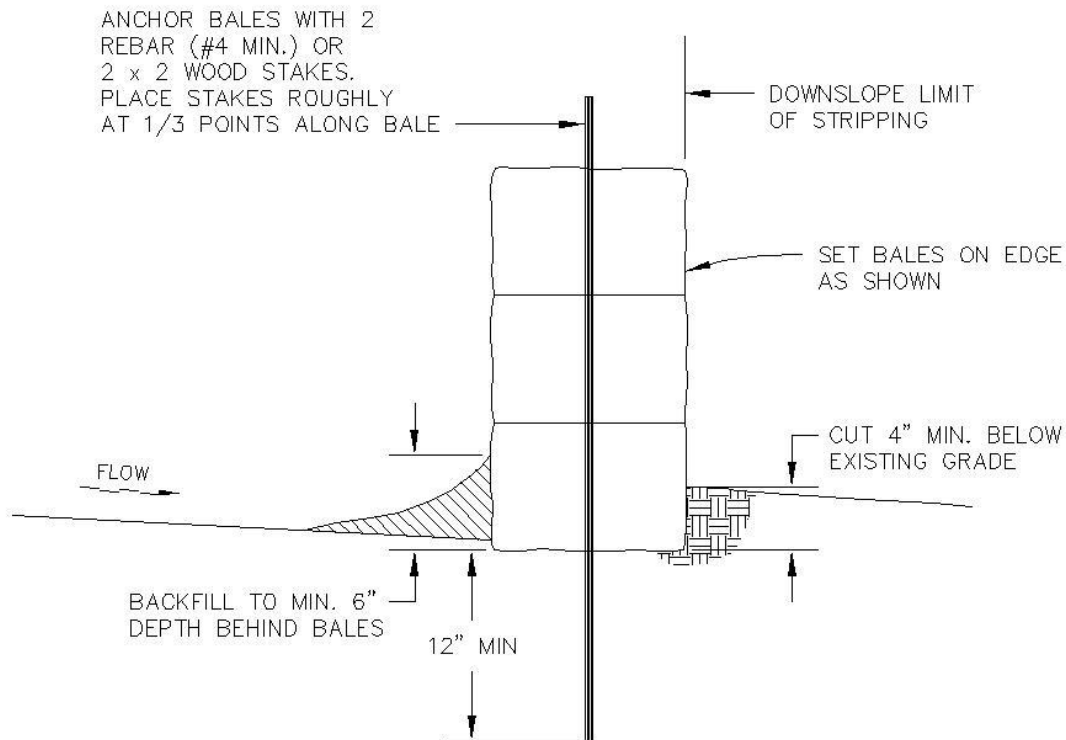
Ref: APWA (3/90)



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ESTIMATED ANNUAL
SEDIMENT ACCUMULATION

FIGURE 16



NOTES:

1. PLACE HAY BALE DIKE AT DOWNSLOPE LIMIT OF AREA TO BE GRADED.
2. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
3. BALES SHALL BE PLACED ALONG A LEVEL CONTOUR WITH AN ALLOWANCE OF ± 4 INCHES.
4. SEDIMENT TRAPPED SHALL BE DISPOSED IN AN APPROVED LOCATION IN A MANNER WHICH WILL NOT CONTRIBUTE ADDITIONAL SILTATION.
5. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF FOUR INCHES.
6. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR RE-BARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
7. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED BY CONTRACTOR.
8. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
9. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
10. AT EACH END OF DIKE, TURN DIKE UPSLOPE AND EXTEND UNTIL GROUND SURFACE RISES 18 INCHES.

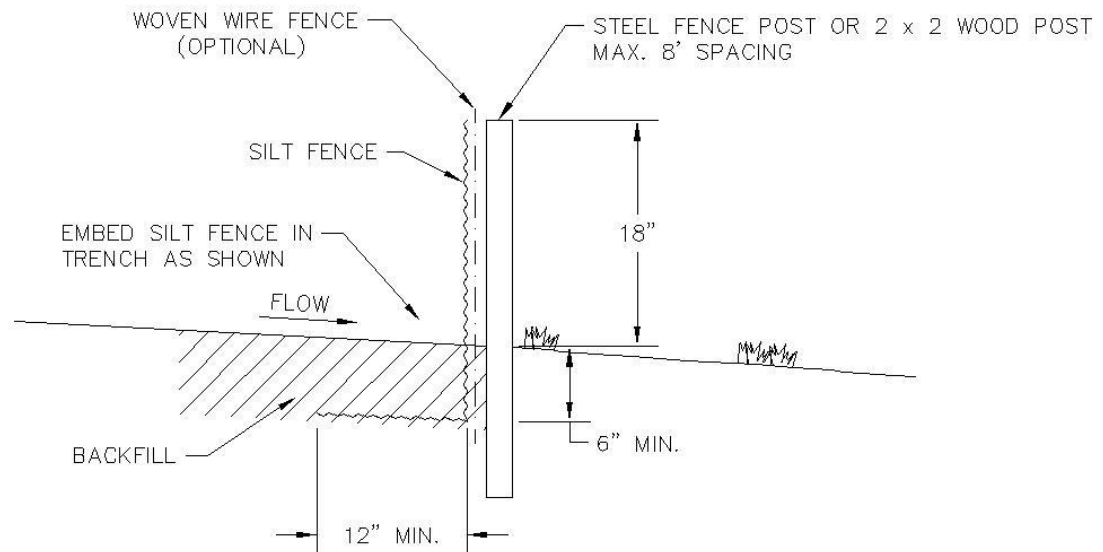
REFERENCE: Adapted from City of Austin & City of Tulsa Erosion and Sedimentation Control Manuals



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

HAY BALE DIKE

FIGURE 17



NOTES:

1. PLACE SILT FENCE AT DOWNSLOPE LIMIT OF AREA TO BE GRADED.
2. SILT FENCE SHALL BE PLACED ALONG A LEVEL CONTOUR WITH AN ALLOWANCE OF ± 4 INCHES.
3. SEDIMENT TRAPPED BY THIS PRACTICE SHALL BE DISPOSED OF IN AN APPROVED SITE IN A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WOVEN WIRE, WHICH IS IN TURN ATTACHED TO THE STEEL FENCE POSTS.
5. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6 INCHES.
8. AT EACH END OF SILT FENCE, TURN FENCE UPSLOPE AND EXTEND UNTIL GROUND SURFACE RISES 18 INCHES.

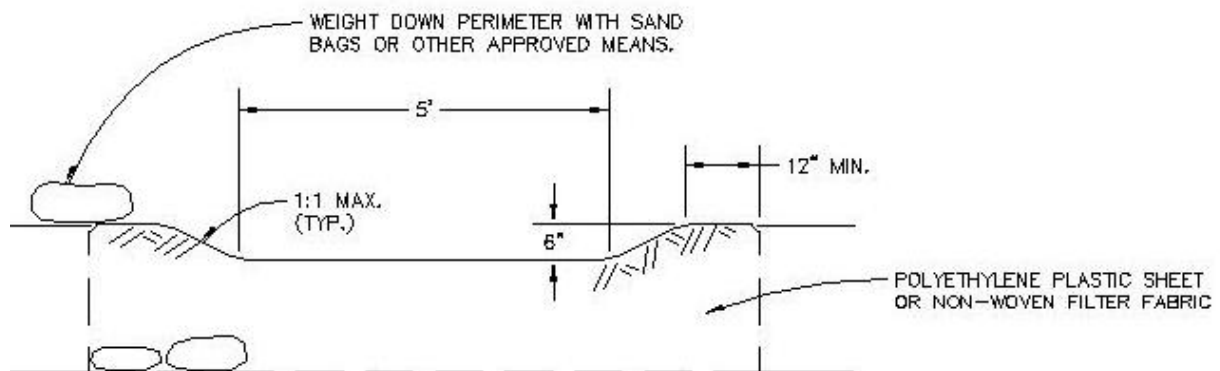
REFERENCE: Adapted from City of Austin & City of Tulsa Erosion and Sedimentation Control Manuals



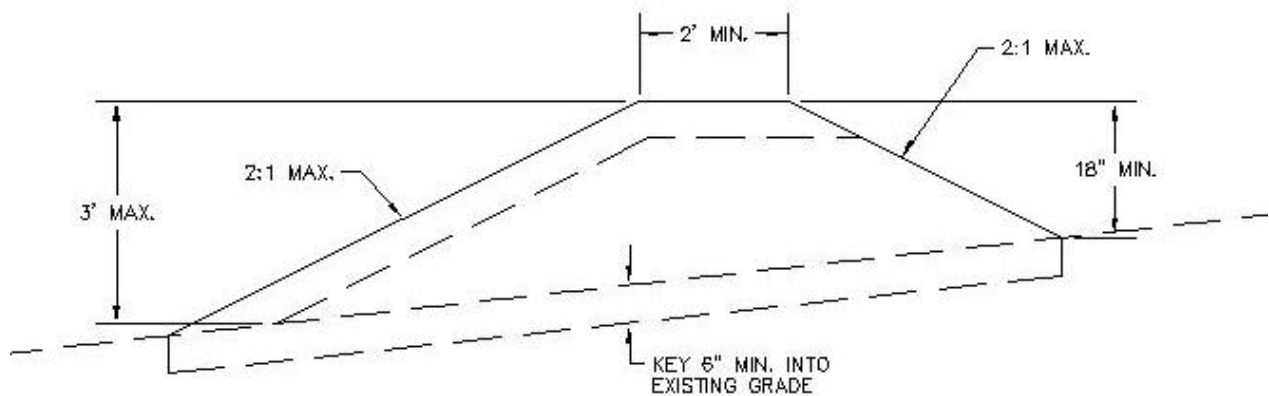
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

SILT FENCE

FIGURE 18



OVERFLOW AREA



NOTES:

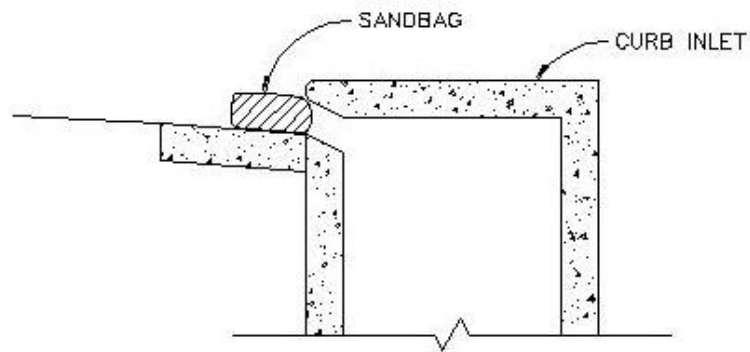
1. SOIL IN BERM SHALL BE FIRMLY COMPACTED.
2. AT EACH END OF BERM, TURN BERM UPSLOPE AND EXTEND UNTIL GROUND SURFACE RISES TO TOP OF BERM ELEVATION.
3. PROVIDE OVERFLOW AREAS AT 200 FT. MAX. INTERVALS.



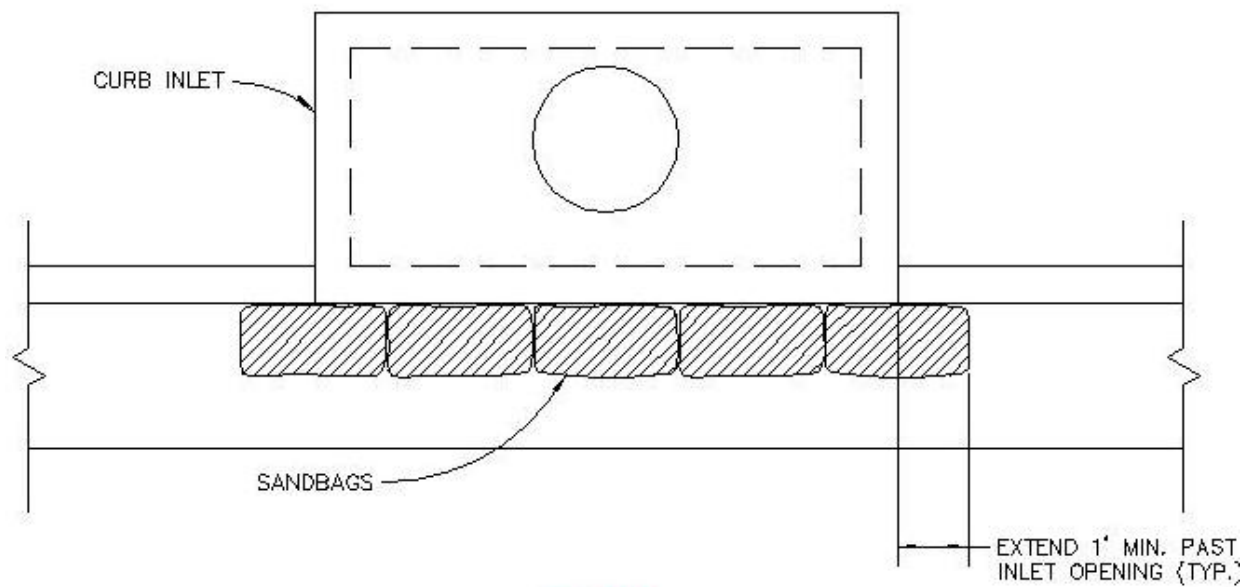
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

TEMPORARY SILT
CONTAINMENT BERM

FIGURE 19



CROSS-SECTION



PLAN

NOTES:

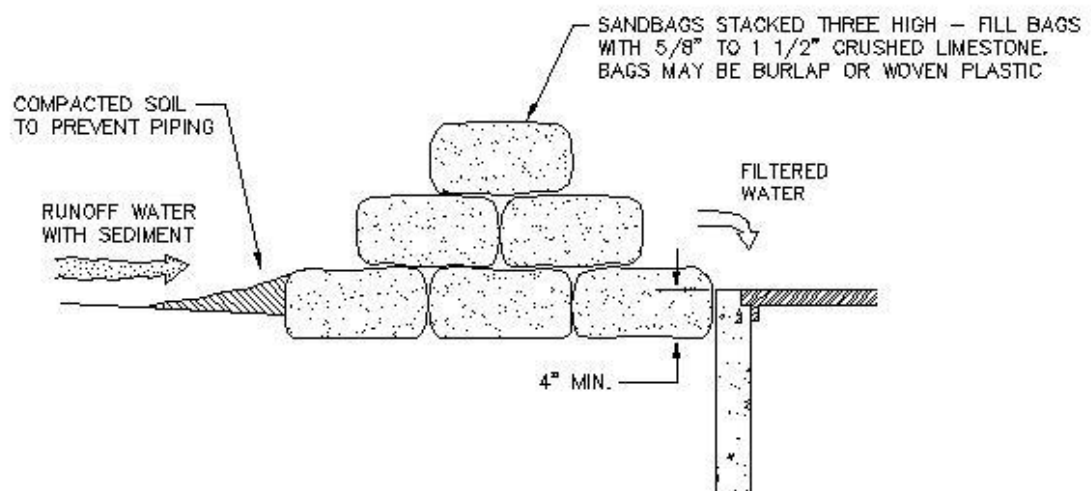
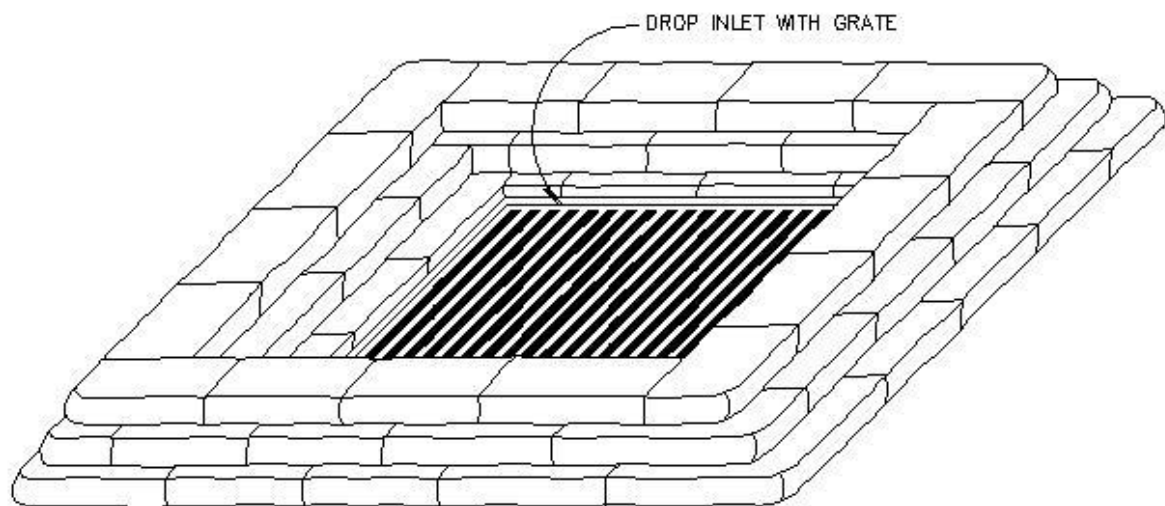
1. FILL BAGS WITH 5/8" CRUSHED LIMESTONE.
2. BAGS SHALL BE BURLAP OR BIODEGRADABLE PLASTIC.
3. BAGS SHALL BE INSPECTED AND REPLACED AS NEEDED.



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

SAND BAG SEDIMENT TRAP
FOR CURB INLETS

FIGURE 20



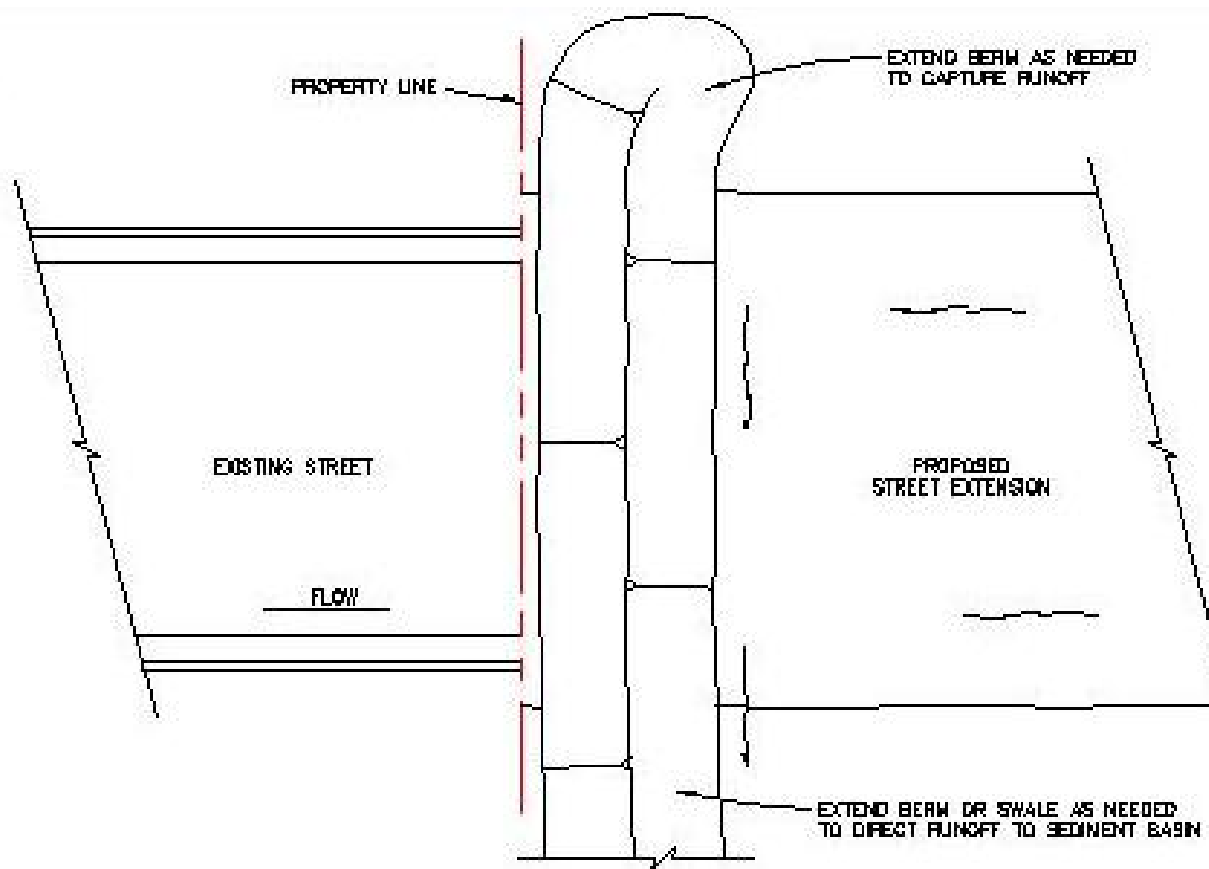
DROP INLET SEDIMENT FILTER



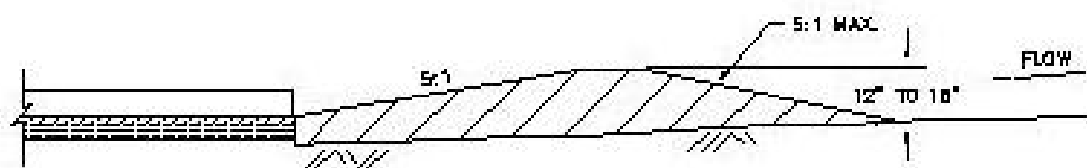
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

AREA INLET
PROTECTION

FIGURE 21



PLAN



CROSS-SECTION

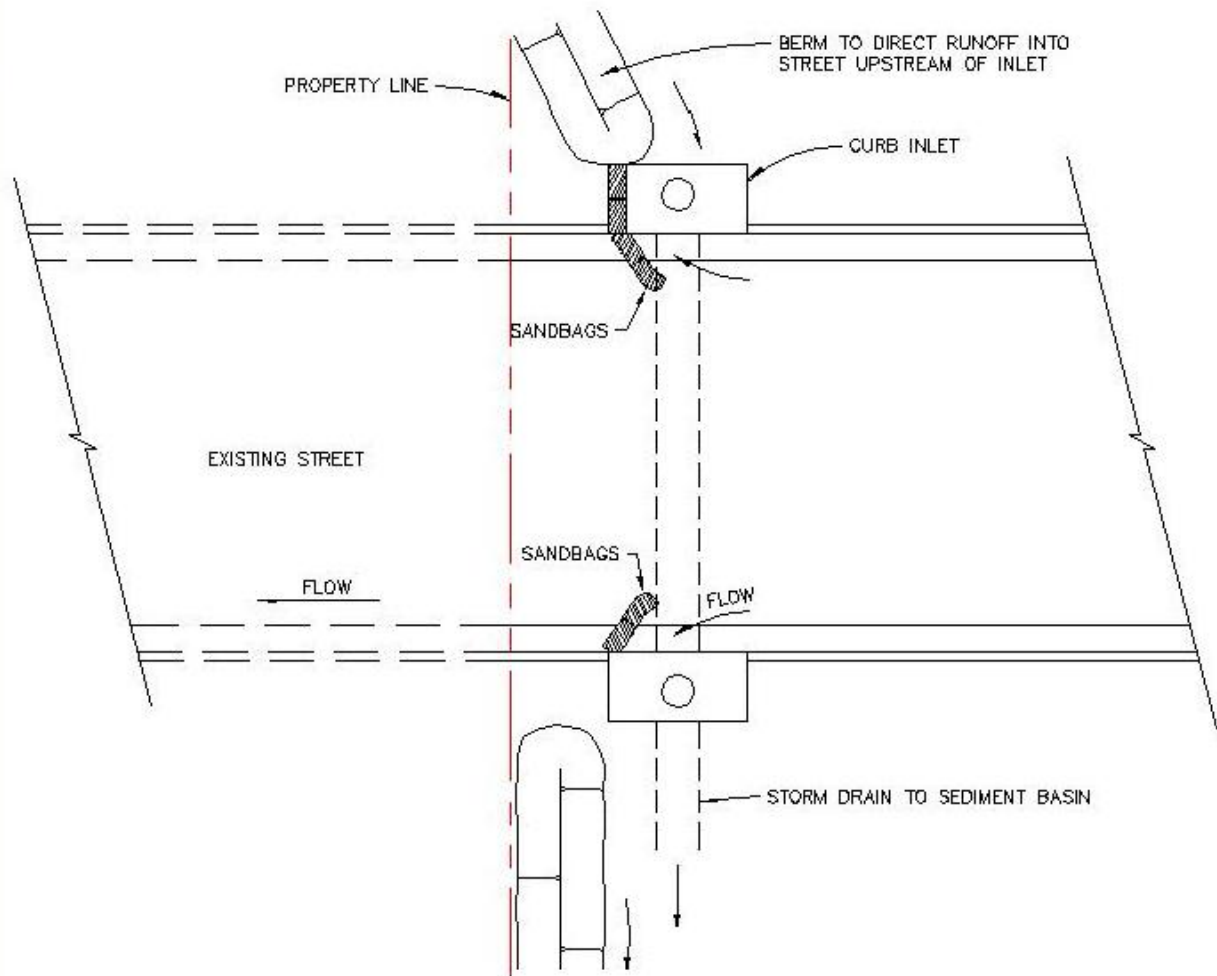
CASE 1
AFTER INITIAL EXCAVATION
OF SUBGRADE



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

DIVERSION OF RUNOFF
CURBED STREET

FIGURE 22



NOTE: FILL SANDBAGS WITH CHAT OR LIMESTONE SAND

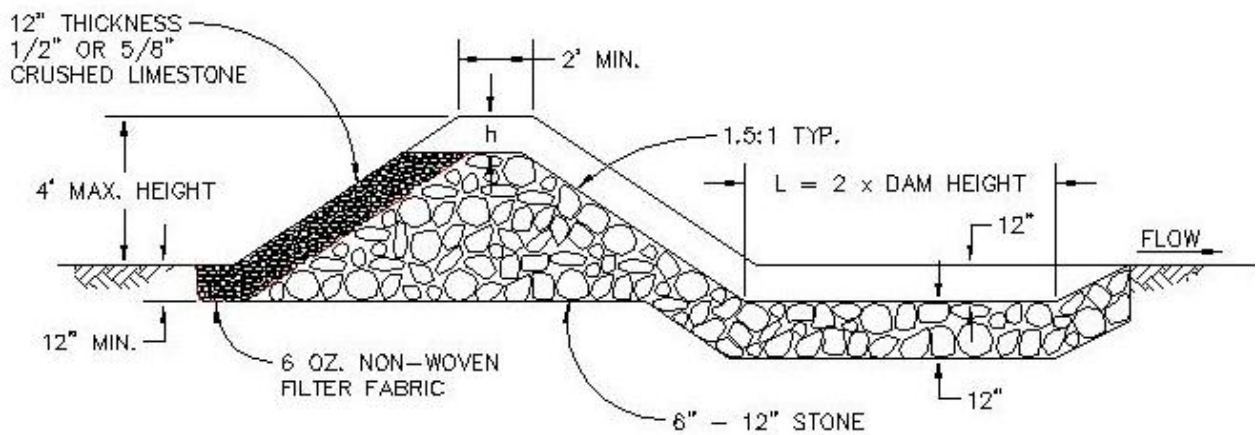
CASE 2
AFTER PAVEMENT AND
INLETS COMPLETED



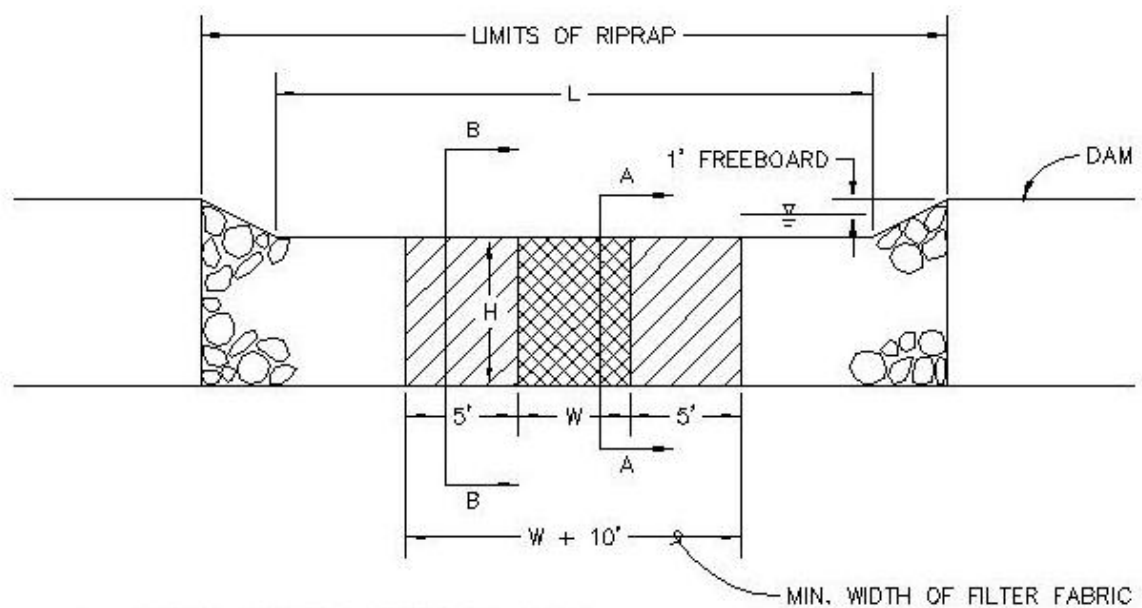
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

DIVERSION OF RUNOFF
CURBED STREET

FIGURE 23



SECTION A - A (THRU GRAVEL FILTER)



L = LENGTH REQUIRED TO PASS Q_{10} WHILE
MAINTAINING 1 FT. OF FREEBOARD

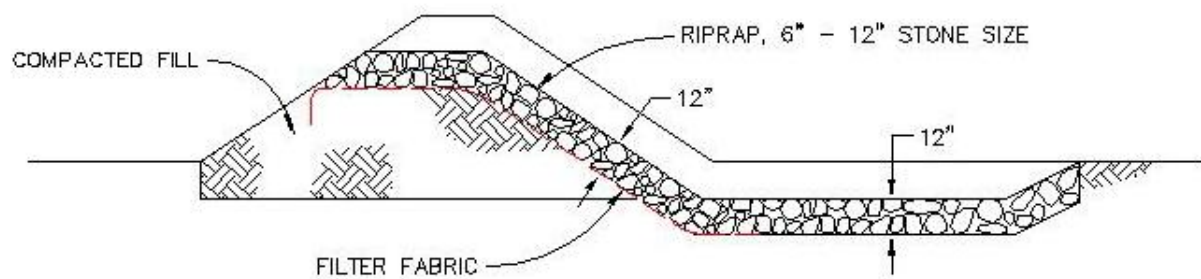
W = WIDTH OF ROCK FILTER AREA



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STORMWATER MANAGEMENT
CRITERIA

GRAVEL FILTER DAM

FIGURE 24



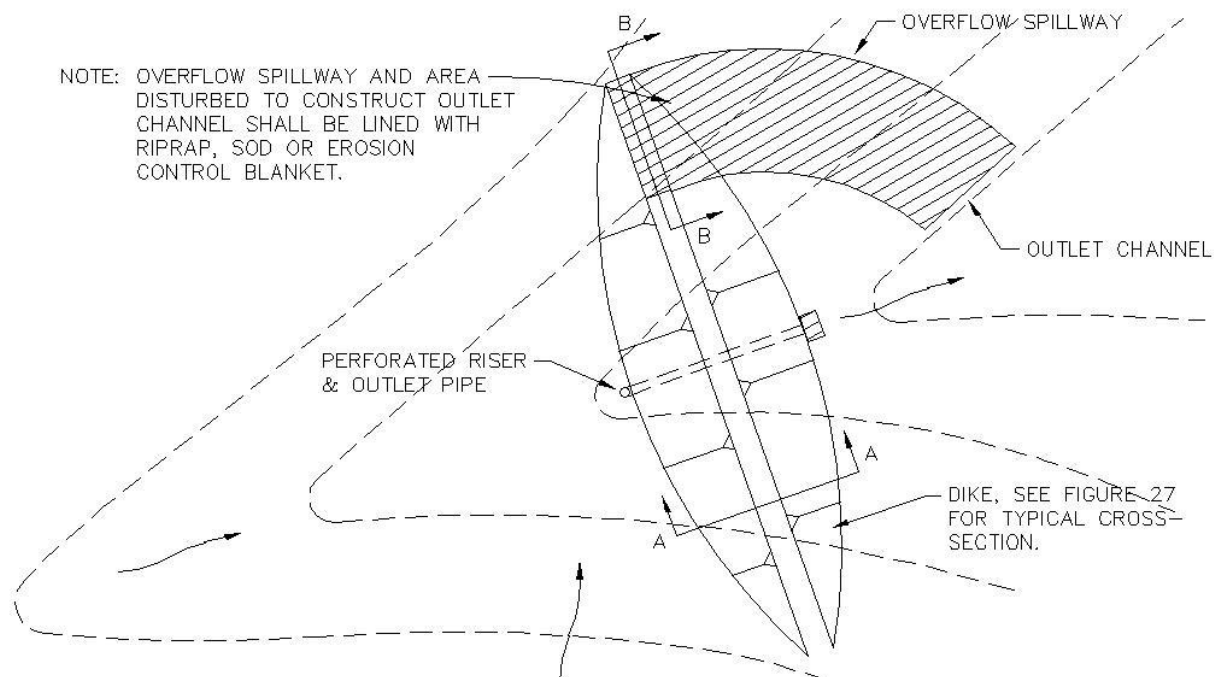
SECTION B – B
(FIGURE 24)



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STORMWATER MANAGEMENT
CRITERIA

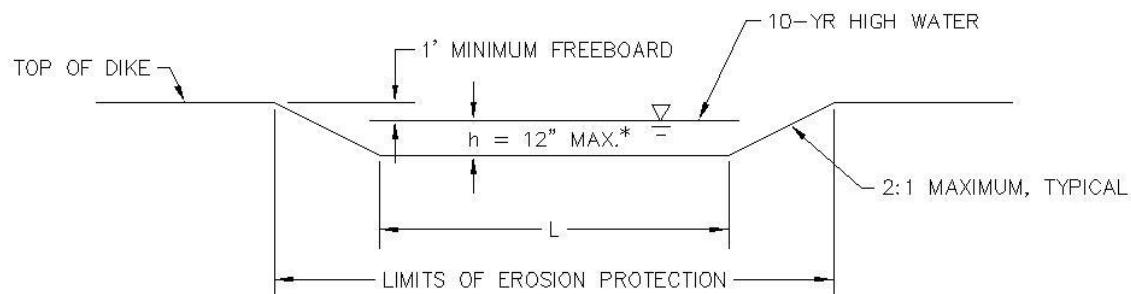
RIPRAP SPILLWAY
GRAVEL FILTER DAM

FIGURE 25



TYPICAL COMPONENTS OF TEMPORARY SEDIMENT BASIN PLAN

(PERFORATED RISER PIPE AND OVERFLOW SPILLWAY SHOWN. GRAVEL FILTER DAM AND RIPRAP OVERFLOW SPILLWAY AS SHOWN IN FIGURES 24 AND 25 MAY ALSO BE USED.)



* $h = 6''$ MAX. IF SOD LINING USED

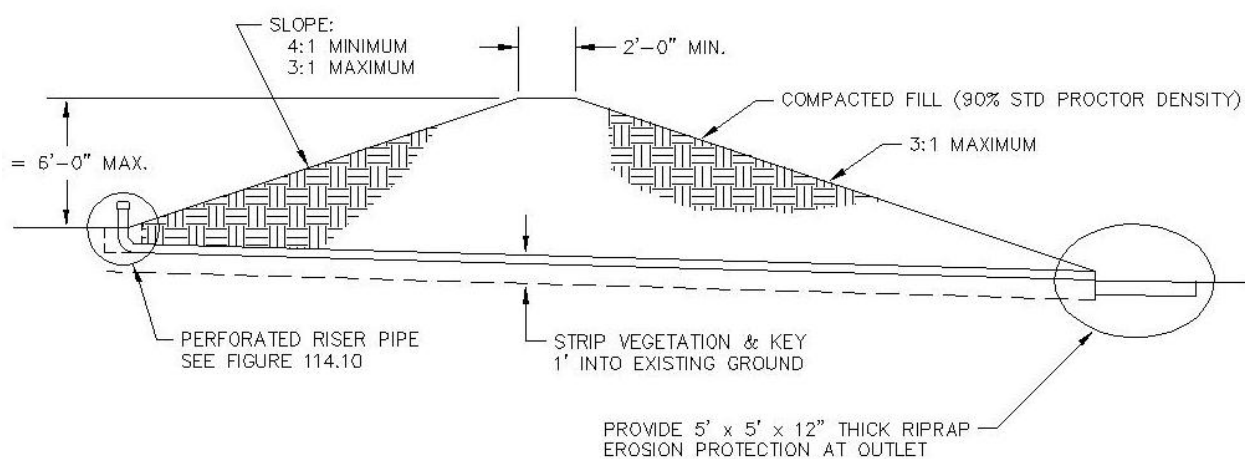
SECTION B - B TYPICAL OVERFLOW SPILLWAY CROSS-SECTION



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

TEMPORARY SEDIMENT
BASIN

FIGURE 26



SECTION A — A
(FIGURE 26)

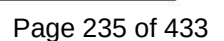
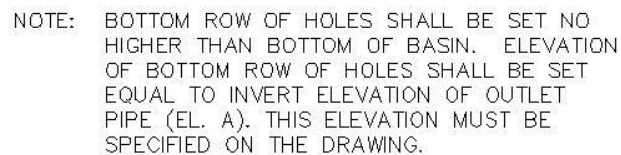


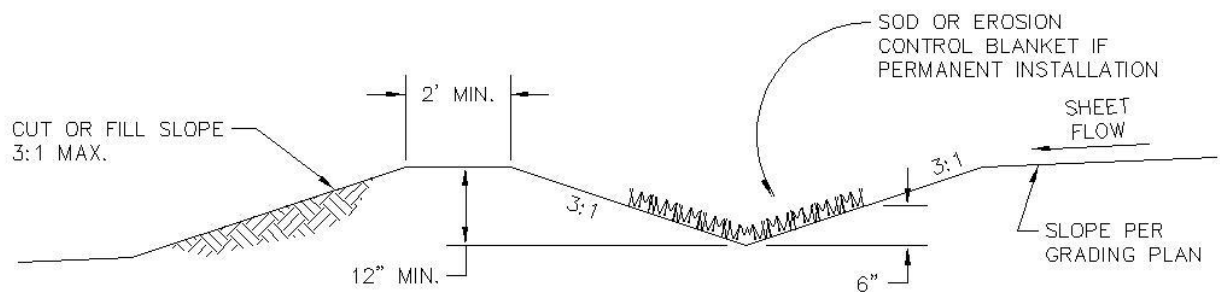
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

TYPICAL SECTION SEDIMENT
BASIN BERM & OUTLET

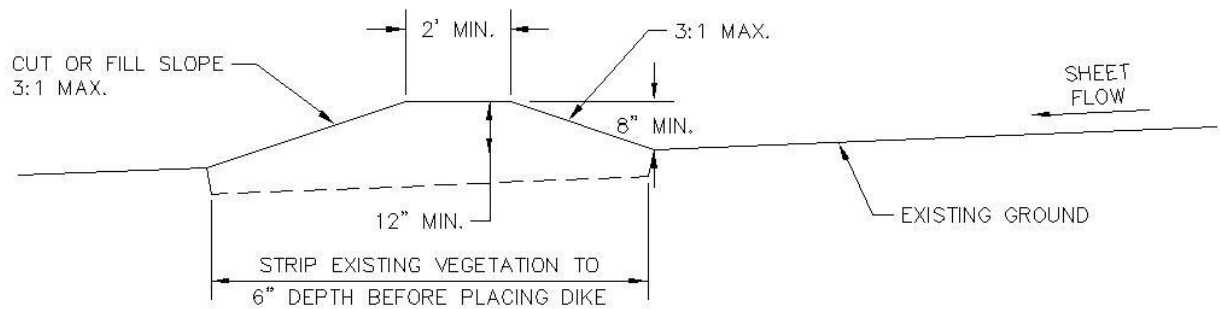
FIGURE 27

d = HOLE DIAMETER





SWALE



DIKE

NOTES:

1. DIKE SHALL BE COMPACTED TO DENSITY EQUAL TO THAT SPECIFIED FOR ADJOINING AREA (90% STANDARD PROCTOR DENSITY, MINIMUM).
2. MINIMUM 1% GRADE MUST BE PROVIDED FOR SWALE OR ALONG UPSLOPE SIDE OF DIKE FOR PROPER DRAINAGE.

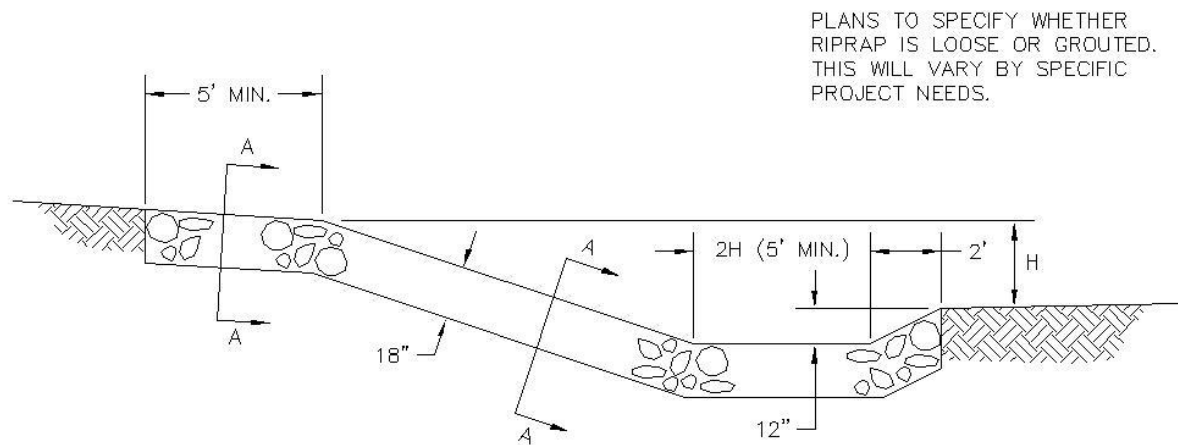
REFERENCE: Adapted from City of Austin & City of Tulsa Erosion and Sedimentation Control Manuals



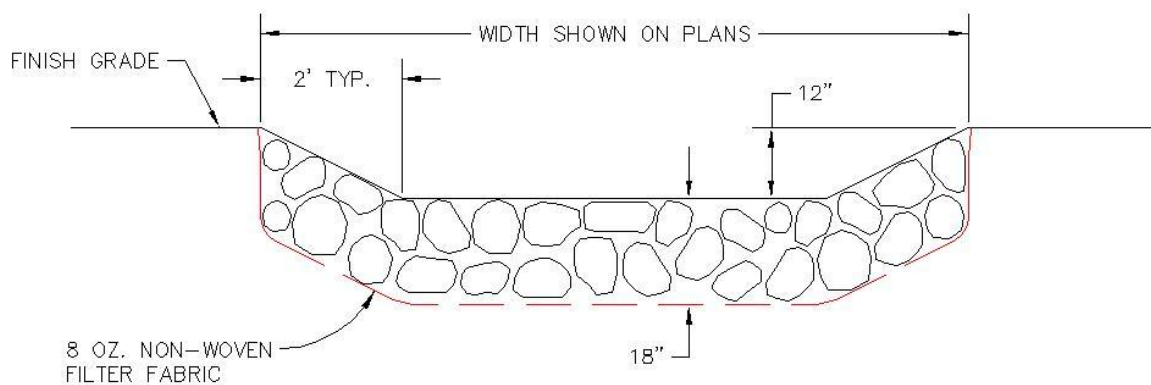
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

DIVERSION DIKES AND
SWALES

FIGURE 29



TYPICAL SECTION



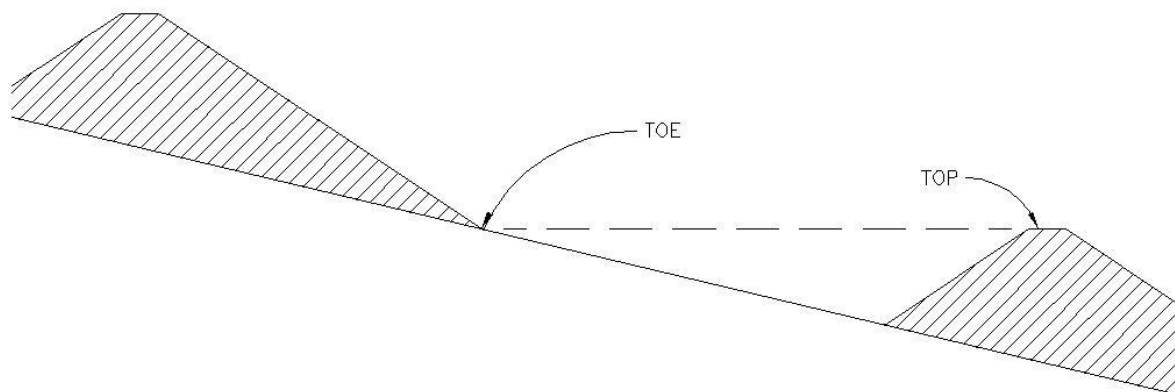
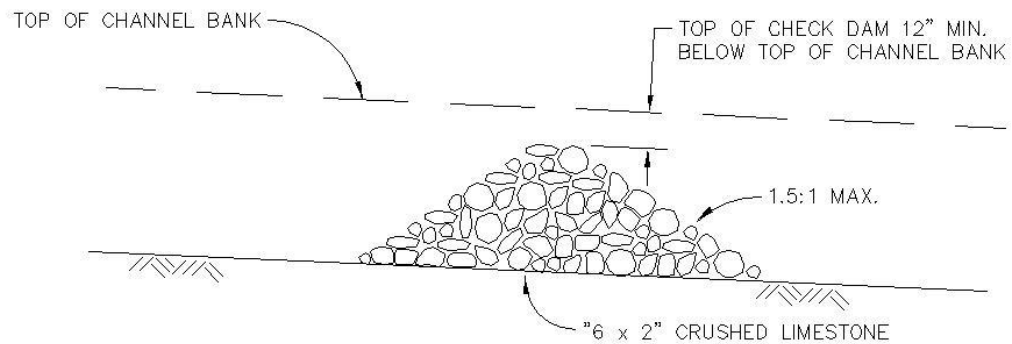
SECTION A - A



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

RIPRAP CHUTE
CROSS SECTION

FIGURE 30



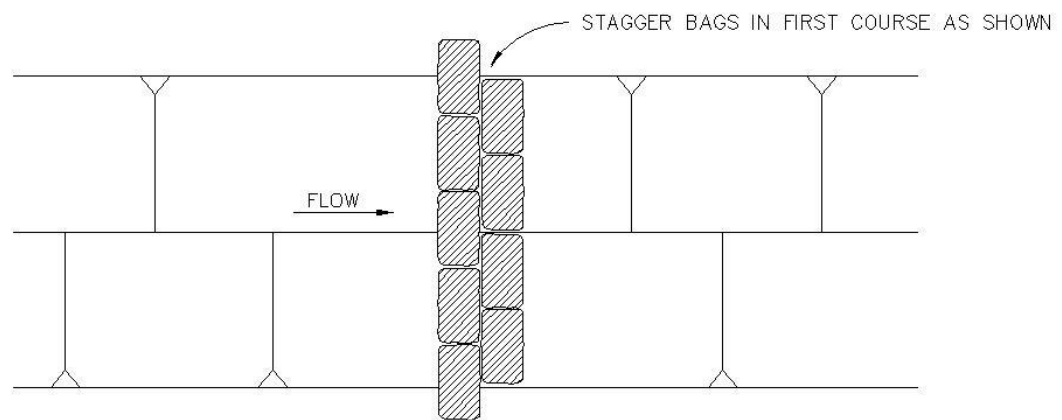
TYPICAL CHECK DAM SPACING



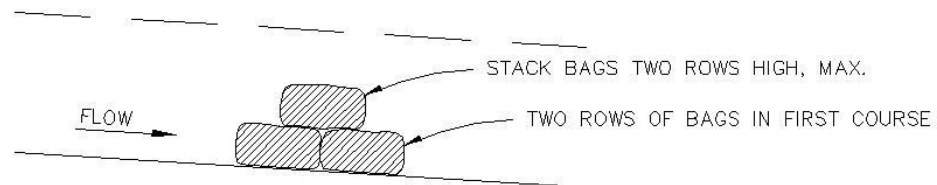
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

ROCK CHECK DAM

FIGURE 31



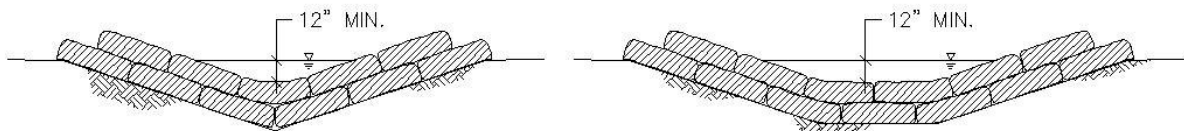
PLAN



PROFILE

NOTES:

FILL BAGS WITH 5/8" TO 1 1/2" CRUSHED LIMESTONE.
BAGS MAY BE BURLAP OR WOVEN PLASTIC.
SPACE CHECK DAMS AS SHOWN IN FIG. 31 OR AS
SPECIFIED ON SEDIMENT & EROSION CONTROL PLAN.



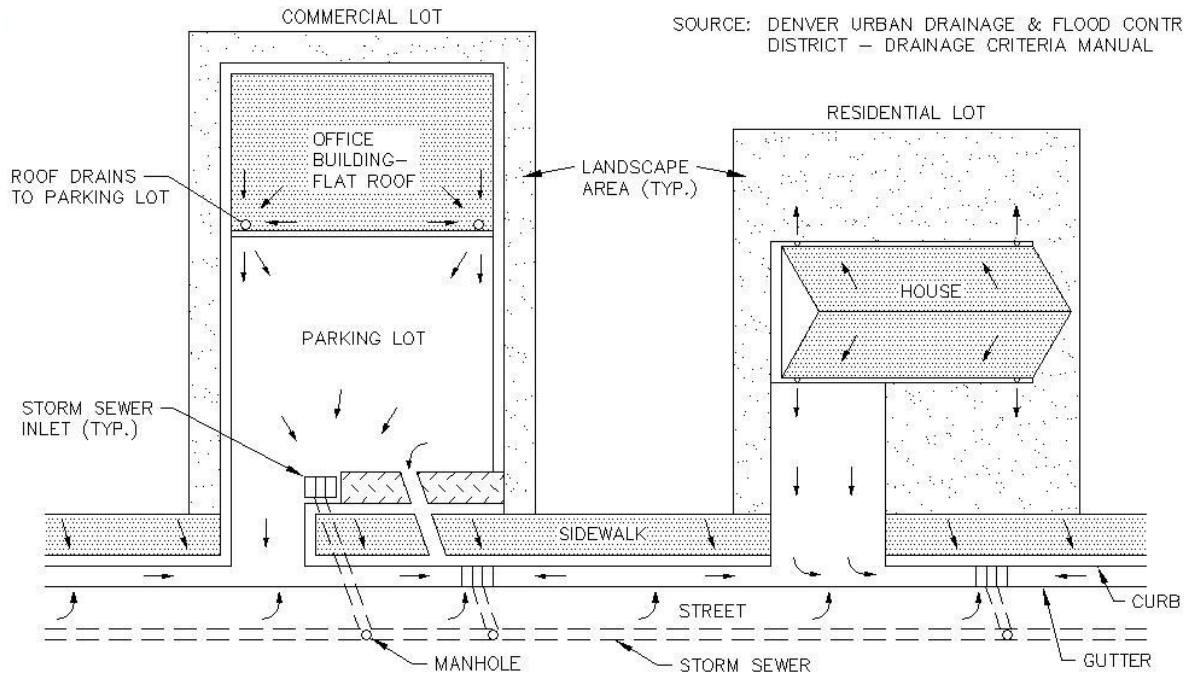
TYPICAL CROSS-SECTIONS



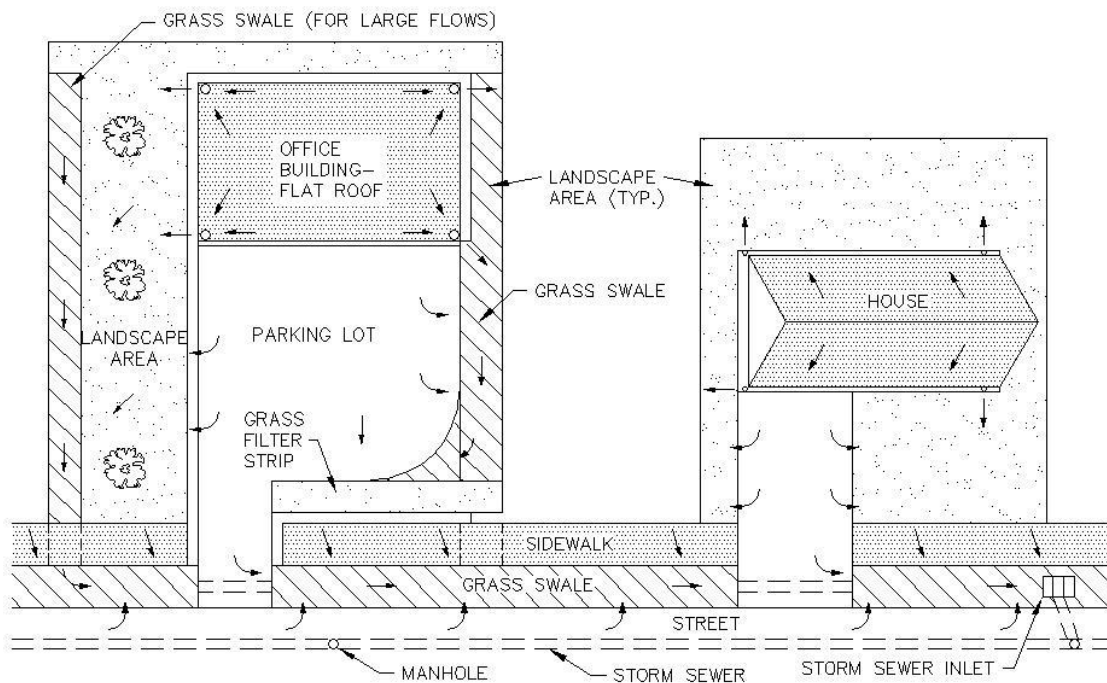
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

SANDBAG CHECK DAM

FIGURE 32



TRADITIONAL SITE & STREET DRAINAGE DESIGN



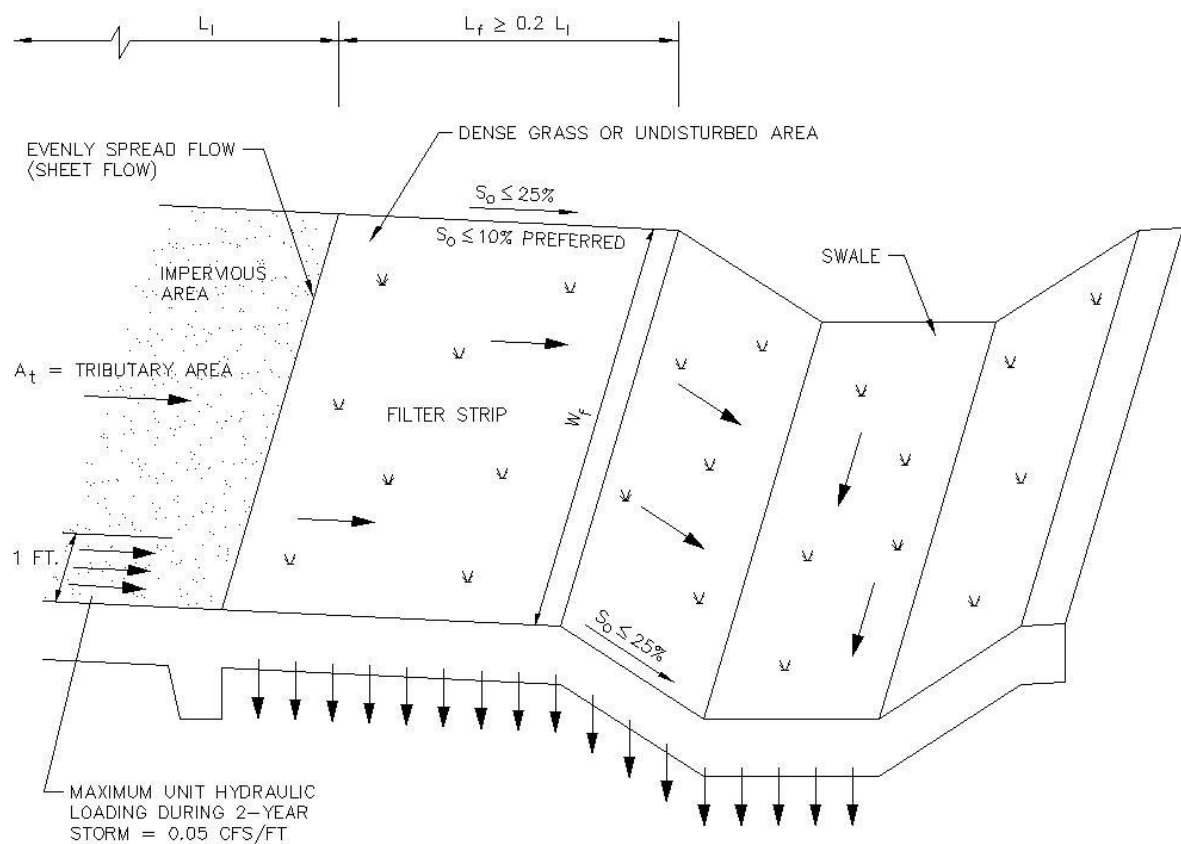
MINIMIZING DIRECTLY CONNECTED IMPERVIOUS AREAS



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

EXAMPLE OF MINIMIZING
DIRECTLY CONNECTED
IMPERVIOUS AREA

FIGURE 33



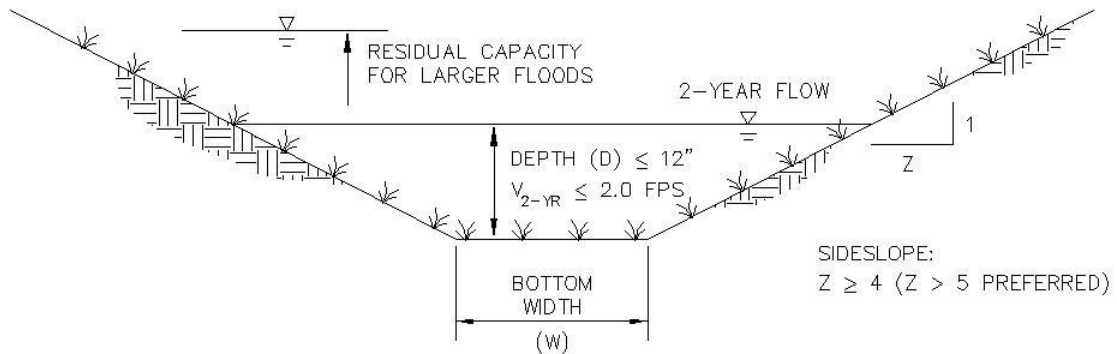
ADAPTED FROM DENVER URBAN DRAINAGE & FLOOD
CONTROL DISTRICT — DRAINAGE CRITERIA MANUAL



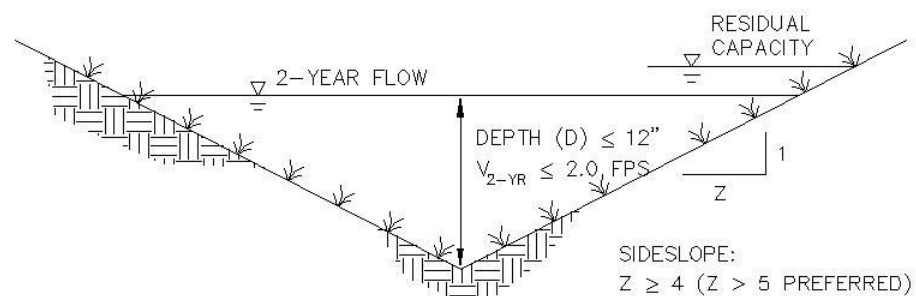
CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

VEGETATIVE FILTER STRIP
WATER QUALITY BMP

FIGURE 34



TRAPEZOIDAL GRASS-LINED SWALE SECTION



TRIANGULAR GRASS-LINED SWALE SECTION

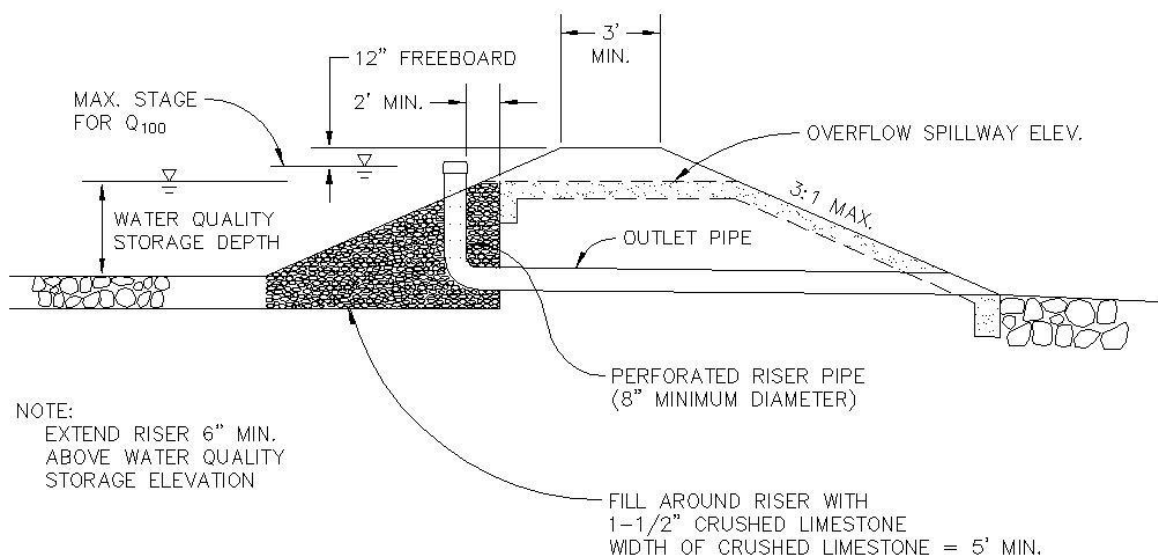
ADAPTED FROM DENVER URBAN DRAINAGE & FLOOD
CONTROL DISTRICT — DRAINAGE CRITERIA MANUAL



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

GRASS SWALE
WATER QUALITY BMP

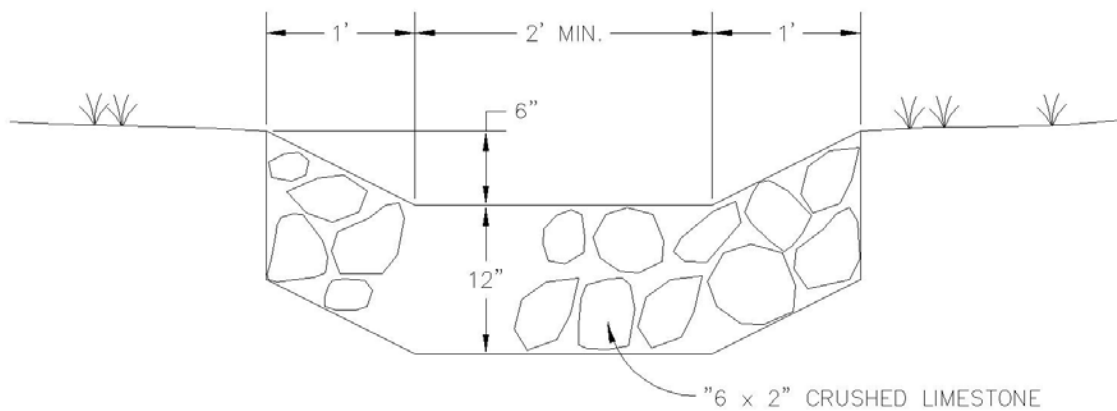
FIGURE 35



CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

EXTENDED DRY DETENTION
WATER QUALITY BMP

FIGURE 36



ROCK TRICKLE CHANNEL FOR
EXTENDED DRY DETENTION BASINS
TYPICAL CROSS SECTION
WATER QUALITY BMP

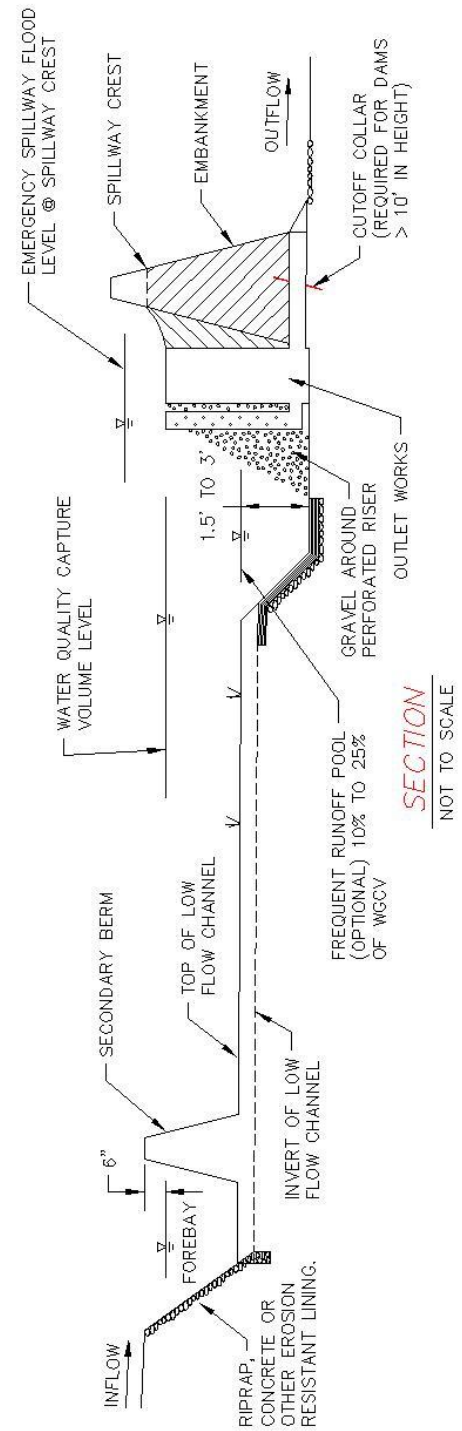
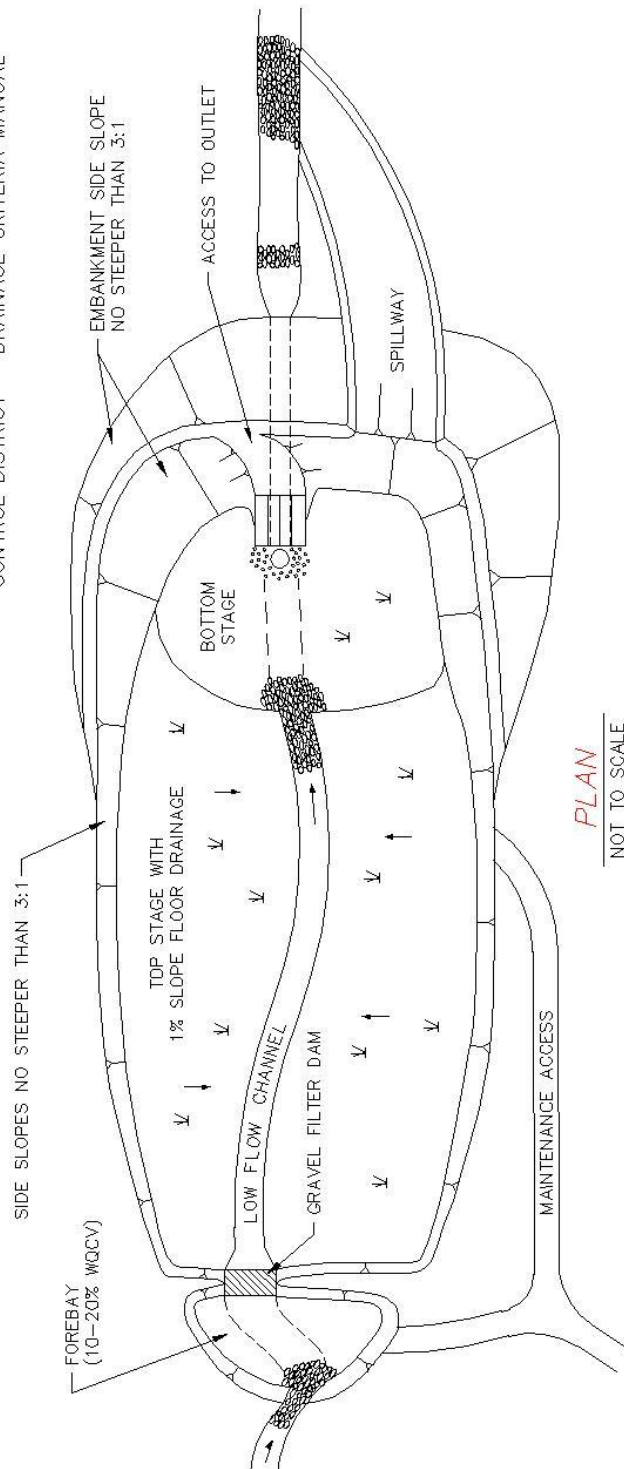


CARL JUNCTION, MISSOURI
STORMWATER MANAGEMENT
CRITERIA

TRICKLE CHANNEL
WATER QUALITY BMP

FIGURE 37

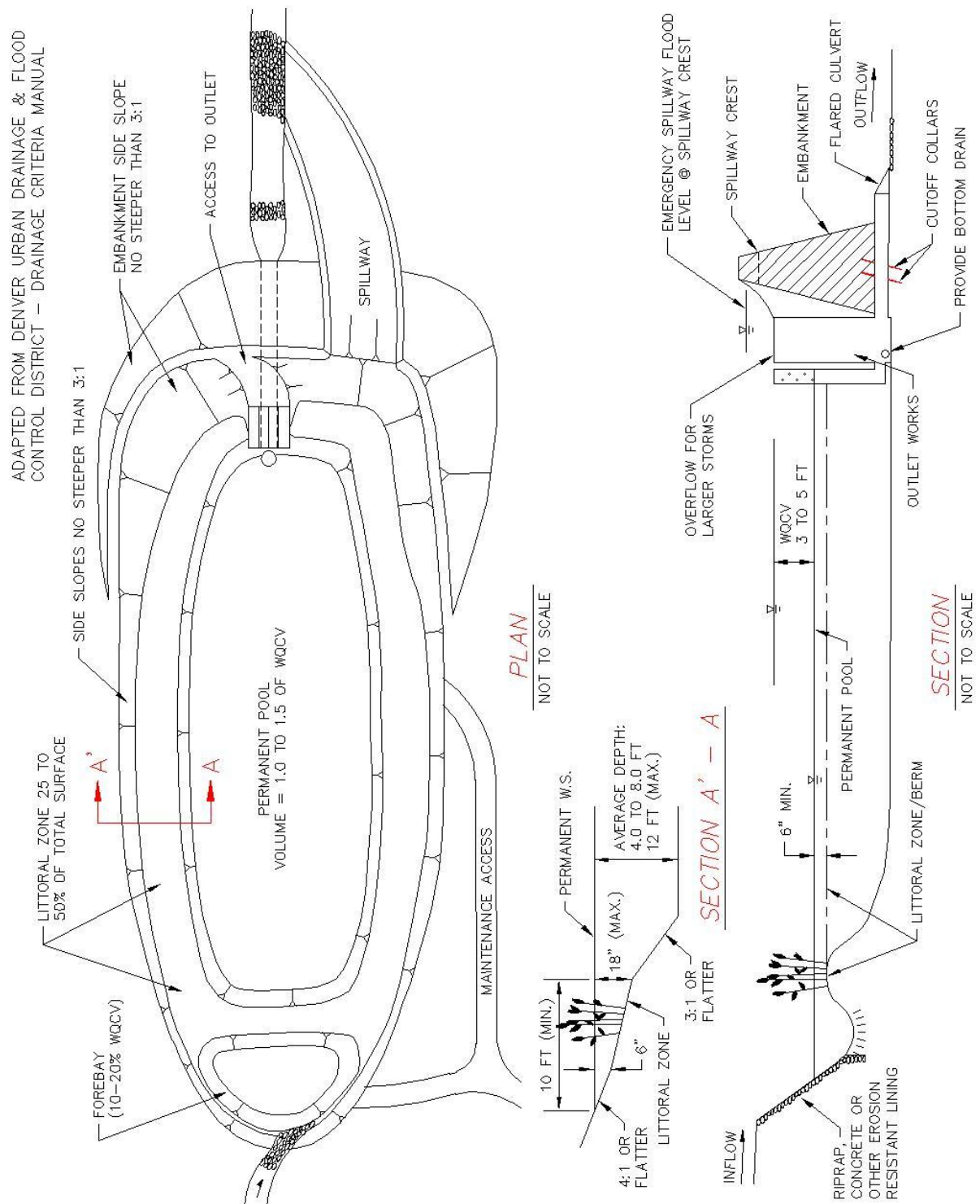
ADAPTED FROM DENVER URBAN DRAINAGE & FLOOD
CONTROL DISTRICT - DRAINAGE CRITERIA MANUAL

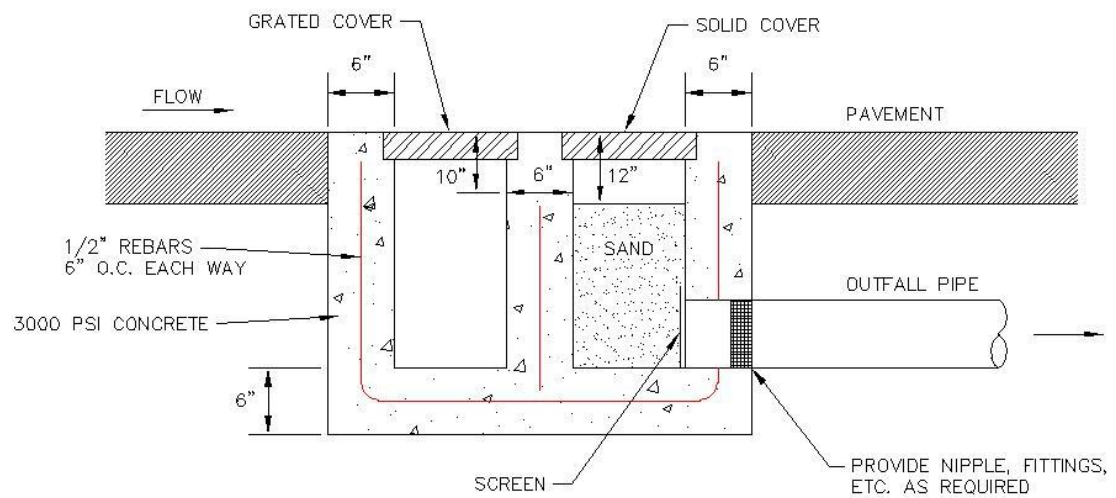
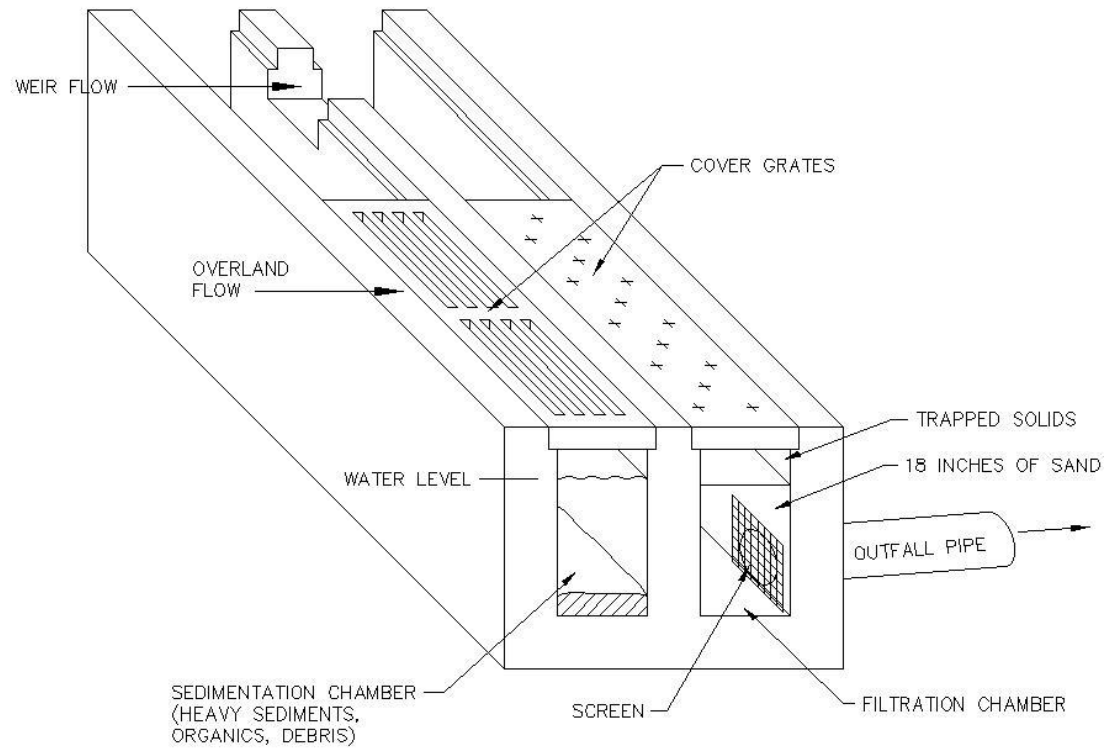


CARL JUNCTION, MISSOURI STORMWATER MANAGEMENT CRITERIA

EXTENDED DRY DETENTION BASIN TYPICAL DETAILS

FIGURE 38





FROM: EPA 1992



CARL JUNCTION, MISSOURI STORMWATER MANAGEMENT CRITERIA

SAND FILTER SCHEMATIC

FIGURE 40

REQUESTED COUNCIL MEETING DATE: January 16, 2024

ITEM: Bill No. 2024-04: Stratford-Freeman Storm Water Grant Modification

ORIGINATING DEPARTMENT: Development Services Department

ATTACHMENT:

1. Bill No. 2024-04 Amendment of agreement w DED RE CDBG program funding hazard mitigation planning
 2. Amendment-to-the-Environmental-Review-Record
 3. FIRMETTE_2023-12-31
-

PURPOSE:

The purpose of this item is to gain the council's approval for the mayor to sign a resolution to seek a modification to the current DED CDBG Stormwater Grant to extend the area of the box culvert construction south along Freeman Road approximately 160 feet.

BACKGROUND:

Bids for the construction of the Stratford-Freeman stormwater project came in under budget, leaving approximately \$200,000 unused. This resolution would allow the city to seek an additional 160 feet of box culvert on the south end of the Freeman Road portion with the intent of extending the culvert under Bond Street.

RECOMMENDATION:

Staff recommends the council authorize the resolution.

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Amendment to the Agreement with the Department of Economic Development, an executive branch agency of the State of Missouri, for the purpose of accepting community development block grant program funding for hazard mitigation planning; and authorizing the Mayor or his designee to execute the same by and on behalf of the City of Neosho.

WHEREAS, on May 4, 2021, Council Bill No. 2021-47 was approved adopting Ordinance Bill No. 180-2021 to authorize and accept the Agreement with the Department of Economic Development for the purpose of accepting community development block grant program funding for hazard mitigation planning; and

WHEREAS, an Amendment to said Agreement has been certified by the Department of Economic Development for review and approval by the City of Neosho.

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Amendment to the Agreement by and between the City of Neosho, Missouri, and the Department of Economic Development, an executive branch agency of the State of Missouri, for the purpose of accepting community development block grant program funding for hazard mitigation planning, a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit “A,” be and the same is hereby approved.

Section 2. That the Mayor or his designee is hereby authorized and directed to execute said Agreement by and on behalf of the City of Neosho, Missouri.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney



Missouri Department of Economic Development

AMENDMENT TO THE ENVIRONMENTAL REVIEW RECORD

Responsible Entity: City of Neosho, MO

Project Number: 2019-DP-07

Project Name: Stratford and Freeman Stormwater Improvements

Estimated Project Costs for Proposed Activities in Amendment - All sources and amounts!

CDBG Funds: \$2,299,000.00	Other State Funds: \$0.00
Local Cash: \$151,000.00	Federal Funds: \$0.00
Private: \$0.00	In-Kind: \$0.00
Other: \$0.00	TOTAL: 2,450,100.00

Project Design: *Select all that are applicable to the project location indicated above and attach.*

- | | | |
|---|--|---|
| ☒ PER | ☐ Site Plan | ☐ Building Design/Renderings |
| ☐ PAR | ☐ Work Write-up | ☐ Cost Estimates/Revise Budget |
| ☐ Other: _____ | ☐ N/A, Explain: _____ | |

Original Project Description:

The city of Neosho wants to add a storm sewer system along Stratford and Freeman roads. This will include the addition of approximately 1750 L.F. of buried box culverts, 19 inlets, and 600 L.F. of curb and gutter. The proposed storm sewer will allow for the filling of the existing roadside ditch. This project will also require lowering approximately 700 L.F. of existing sanitary sewer main. The entire project is located on existing right-of-way and property already owned by the City of Neosho.

The proposed storm sewer will empty into an existing tributary of Hickory Creek by exiting an reinforced concrete pipe parallel to Freeman Road. The pipe will exit onto rock to control washout. Erosion control measure will be in place during construction until vegetation is in place to adequately control any erosion. Additional fill material will be removed from the site as construction progresses. The majority of the project will be constructed outside of the floodplain.

Proposed Activities:

Additional proposed activities are recommended to be included with the original proposed activities by extending the storm drainage approximate 160 feet south along Freeman Road. These new activities would connect to the previously approved storm drainage system and continue the piping south along Freeman and terminating the project south of the intersection of Freeman Road and Boyd Street. The additional work will not change the overall topography of the drainage area flowing to this location. Adding this work will only remove more of the ditch along Freeman Road and direct the stormwater flow to underground piping.

The proposed storm sewer will empty into an existing tributary of Hickory Creek by exiting an reinforced concrete pipe parallel to Freeman Road. The pipe will exit onto rock to control washout. Erosion control measure will be in place during construction until vegetation is in place to adequately control any erosion. Additional fill material will be removed from the site as construction progresses. The added work will be constructed outside of the floodplain.

Additional Conditions of Approval for Proposed Activities:

See supporting documentation from attached;
Floodplain Development
US Fish and Wildlife Service (FWS)
Missouri Department of Conservation (MDC)
Missouri Department of Natural Resources - State Historic Preservation Office (SHPO)
Osage Nation Historic Preservation Office (ONHPO)

The proposed activities may affect endangered bat species given clearing or disturbing suitable roosting habitat will take place to complete the project. However, mitigation measures recommended by FWS are described below.

Mitigation measures are included in the project surveys and permits included within. Measures added by FWS are to restrict tree and brush clearing between April 1st and October 31st and provide adequate sediment control to prevent water pollution runoff.

The City or their Contractor shall notify SHPO and DED if fill material is required for the project so that historic and environmental clearance can be completed before obtaining any fill material.

REVIEW OF ENVIRONMENTAL IMPACTS:

For each impact area below, indicate whether the proposed changes to the project will affect the original determination made (i.e. any of the questions on the worksheet will be answered differently, new permitting requirement, etc.). For those impacts that will be affected, attach the relevant worksheet and supporting documentation.

CEST & EA: **Indicate whether the original determination (or the factors that lead to the determination) will be affected:**

Historic Properties	☒ Will not be affected	☐ Will be affected
Flood Insurance	☒ Will not be affected	☐ Will be affected
Floodplain Management	☒ Will not be affected	☐ Will be affected
Wetlands	☒ Will not be affected	☐ Will be affected
Airport Hazards	☒ Will not be affected	☐ Will be affected
Endangered Species	☒ Will not be affected	☐ Will be affected
Wild and Scenic Rivers	☒ Will not be affected	☐ Will be affected
Farmland Protection	☒ Will not be affected	☐ Will be affected
Noise Control	☒ Will not be affected	☐ Will be affected
Explosive & Flammable Operations	☒ Will not be affected	☐ Will be affected
Water Quality	☒ Will not be affected	☐ Will be affected
Air Quality	☒ Will not be affected	☐ Will be affected
Contamination & Toxic Materials	☒ Will not be affected	☐ Will be affected
Environmental Justice	☒ Will not be affected	☐ Will be affected

EA Only:

Land Development	☐ Will not be affected	☐ Will be affected
Socioeconomic	☒ Will not be affected	☐ Will be affected
Community Facilities	☒ Will not be affected	☐ Will be affected
Natural Facilities	☒ Will not be affected	☐ Will be affected

For each environmental impact where the determination will be affected by the proposed changes to the project, please provide an explanation for how the impacts will be addressed and whether it affects the original ER finding. Please justify your determination.

The additional work does not affect the original ER finding. This determination is based on the fact that the original work area and construction type will not be altered. The added work does not alter the drainage area and with erosion control measures in place no adverse impacts are anticipated. The added work will result in no compliance steps, mitigation, or permitting is required for historic properties, flood insurance, floodplain management, wetland protection, airport hazards, wild & scenic rivers, farmland protection, noise control, and environmental contamination. This was determined for the new area based on pre-existing conditions of the site. Impacts to endangered species were evaluated for the new workzone. Measures will be taken during construction to avoid adverse affects to endangered species. USFWS and MDC have approved of the measures and timing that will be implemented during the project. Mitigation measures approved by USFWS include:

1. No tree or brush clearing between April 1st and October 31st to protect endangered bat species. Tree clearing between November 1st and March 31st is acceptable.
2. Include erosion control devices to limit/prevent contaminated stormwater from entering the stream.

CERTIFICATION OF ORIGINAL ENVIRONMENTAL FINDING:

The Responsible Entity has completed an Amendment to the Environmental Review Record. In conformance with HUD Federal regulation 24 CFR 58.47 – *Re-evaluation of environmental assessment and other environmental findings*, the original environmental review record was examined and the Finding of No Significant Impact (FONSI) determination remains valid.

In my capacity as Certifying Officer on behalf of the Responsible Entity and in conformance with Part 58, I certify that I have independently evaluated the Amendment, including all related documentation, and have supplemented the Amendment with additional information where appropriate. On behalf of the Responsible Entity, I assume responsibility for the accuracy of the information contained herein. I hereby approve the Amendment and acknowledge all identified conditions for approval that must be implemented and appropriately documented.

Signature, RE Certifying Officer

Date

PREPARER'S CERTIFICATION:

As preparer of the Amendment as designated by the Responsible Entity, I certify to the accuracy of the information contained herein.



Preparer Signature

01/02/2024

Date

HISTORIC PROPERTIES
[36 CFR Part 800 MO SHPO Website](#)

1. Based on completion of the "Determination to Consult with Tribes" form, is consultation required? ☐ YES ☐ NO
2. If "Yes," are there [Tribes](#) with an interest in the county(ies) in which the project is to occur? If "Yes," the Responsible Entity (rather than a consultant) must invite the tribes to consult directly. ☐ YES ☐ NO
3. Has the SHPO been notified of the project and requested to provide comments? ☐ YES ☐ NO
4. Is any property in the project listed on or eligible for the [Missouri National Register of Historic Places](#) (can also be accessed through NPS's [National Register of Historic Places](#))? ☐ YES ☐ NO
5. Is the property located within or directly adjacent to a historic district? ☐ YES ☐ NO
6. Does the property's Area of Potential Effect (APE) include a historic district or property (including those that are listed and those that are [eligible for inclusion](#) in the National Register)? ☐ YES ☐ NO
7. If fill material is required for the project, has SHPO been notified? ☐ YES ☐ NO
8. **Result of Section 106 Review:** Attach [Section 106 Project Information Form](#), attachments, and correspondence

Select all that apply below:

- ☐ Architectural Survey Completed
- ☐ Archaeological Survey Completed
- ☐ Memorandum of Agreement

Select one option below:

- ☐ No Historic Properties Affected
- ☐ No Adverse Effect
- ☐ Adverse Effect [Requires MOA or reject project]

Explain all required mitigation measures resulting from the Project 106 review process:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, etc.)

FLOOD INSURANCE
[42 U.S.C. 4106 24 CFR 58.6](#)

*Compliance with mandatory flood insurance purchase does not constitute compliance with floodplain management requirements discussed under the Floodplain Management section of this document

1. Does this project involve financial assistance for construction, rehabilitation, or acquisition of a mobile home, building, or insurable personal property or the purchase of machinery, equipment, fixtures, or furnishings that are insurable under NFIP? ☐ YES ☐ NO

2. If "Yes," is any portion of insurable structure or property located in a Special Flood Hazard Area? ☐ YES ☐ NO

*** Sewer lift stations located in a SFHA that are at least one foot above the base flood elevation, or as specified in the local floodplain management ordinance, are not subject to flood insurance requirements.*

3. If "Yes," does the RE participate in the [National Flood Insurance Program \(NFIP\)](#)? ☐ YES ☐ NO

4. If "Yes," is the community in good standing with the NFIP? ☐ YES ☐ NO

If "Yes" to all of the above, please attach proof of flood insurance or submit during the project once available.

FLOODPLAIN MANAGEMENT

E.O. 11988 24 CFR Part 55

1. Is this project listed as exempt from the Floodplain Management requirements in [24 CFR 55.12\(c\)](#) or inapplicable per [24 CFR 55.12\(b\)](#)?

☐ YES ☐ NO

*See Guide for help making determination

If "Yes," identify the citation: 24 CFR 55.12(b)(____) OR 24 CFR 55.12(c)(____)

2. Does the project occur in a [floodplain](#):

- A. Floodway
- B. Coastal High Hazard Area (there are none in Missouri)
- C. 500-year floodplain (B zone or shaded X zone)
- D. 100-year floodplain (A zone)

☐ YES ☐ NO
☐ YES ☐ NO
☐ YES ☐ NO
☐ YES ☐ NO

3. If "Yes" to 2A, is the project a functionally dependent use?

If "Yes," HUD 8-Step Process is required.

If "No," the project cannot take place at this location.

☐ YES ☐ NO

4. If "Yes" to 2C, is the project a critical action?

If "Yes," HUD 8-Step Process is required.

If "No," the project can proceed at this location.

☐ YES ☐ NO

5. If "Yes" to 2D, is the 5-step process (steps 1, 4-6, 8) applicable per [24 CFR 55.12\(a\)](#)?

*Not common; see guide for more information

If "Yes," identify the citation: 24 CFR 55.12(a) (____)

If "No," the HUD 8-step Process is required.

☐ YES ☐ NO

Explain all required mitigation measures identified in the 8-step/5-step process:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, etc.)

WETLANDS PROTECTION

E.O. 11990 24 CFR Part 55

1. Is this project listed as exempt from the Wetland Protections requirements in [24 CFR 55.12\(c\)](#) or inapplicable per [24 CFR 55.12\(b\)](#)?

☐ YES ☐ NO

If "Yes," identify the citation: 24 CFR 55.12(c)(____) OR 24 CFR 55.12(b)(____)

2. Compliance with Wetlands Protection applies to Land Acquisition and/or New Construction related to any of the following. *Check all that apply to the project:*

☐ Buildings and structures

☐ Utility lines

☐ Roads

☐ Storm drains and ditches

☐ Sewer and water systems

☐ Flood control systems

☐ Dredging, filling, excavation (includes rehabilitation to existing buildings and structures)

☐ Expansion or altering the footprint of buildings or structures

3. If the project consists of at least one of the above activities and is not exempt, will the new construction or other ground disturbance impact an on-or off-site [wetland](#)?

☐ YES ☐ NO

"If Yes," the HUD 8-step Process is required.

4. Are there drainage ways, streams, creeks or rivers on or near the project site?

If "Yes," or the project is located in or near wetlands, submit a cover letter with detailed project description, project location including township, range and section, clear and detailed map, and color photographs of the area to U.S. Army Corps of Engineers.

☐ YES ☐ NO

5. Per [24 CFR 55.28\(a\)\(b\)](#) Is the project located outside the 100 year floodplain (or 500 year floodplain for critical actions) AND requires a USACE Section 404 Individual Permit? If "Yes," only steps 6, 7, and 8 of the process are required. Attach the Permit as documentation. All wetlands adversely affected by the action shall be covered by the permit.

☐ YES ☐ NO

*Projects requiring a General or Nationwide Permit must complete the 8-step process.

6. Is the 5-step process (steps 1, 4-6, 8) applicable per [24 CFR 55.12\(a\)](#)?

*Not common; see guide for more information

If "Yes," identify the citation: 24 CFR 55.12(a)(____)

☐ YES ☐ NO

If "No," the HUD 8-step Process is required.

Explain all required mitigation measures resulting from consultation with either of the above entity:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, current land use of project site, etc.)

N/A ☐

HUD 8-STEP DECISION MAKING PROCESS

[E.O. 11990 E.O. 11988 24 CFR 55.20](#)

STEP 1 – Determine if the proposed action is located in a 100-year floodplain/500-year floodplain for critical actions and/or wetland.

1. Based on completion of the previous Floodplain Management and Wetlands Protection sections, the HUD 8- Step Decision Making Process is being completed for:

Select One Below:

- ☐ Floodplain
☐ Wetland
☐ Floodplain AND Wetland

Select One Below:

- ☐ 3-Step (Step 6,7,8)
☐ 5-Step (Steps 1, 4-6, 8)
☐ 8-Step

2. Provide a description of the project, with specific reference to the floodplain/wetland area(s) that will be impacted by this project. The floodplain location should be referenced by the appropriate FEMA community panel, date, and flood zone, included in the Floodplain Management section. The wetlands location should reference the appropriate National Wetlands Inventory map and/or professional wetlands delineation, included in the Wetlands Protection section. Attach additional pages as necessary.

STEP 2 – Involve the public in the decision-making process: Early Public Notice.

Attach a copy of the notice, affidavit of publication and/ or tear sheet, and proof of distribution to environmental agencies and Tribes.

Name of Newspaper: _____ Date of publication: _____

Were comments received in response to the notice?

☐ YES

☐ NO

If "Yes," explain and attach all correspondence:

STEP 3 – Identify and evaluate practicable alternatives. Alternatives MUST be presented and considered for this evaluation to be valid. Attach additional pages as necessary.

1. Alternatives that include modifications to the current proposed site to mitigate adverse impacts:

2. Alternatives located outside the floodplain and/or wetland:

3. No Action Alternative:

STEP 4 – Identify indirect and direct impacts associated with occupying or modifying the floodplain/wetland. The floodplain evaluation should focus on the adverse impacts to lives and property and on natural and beneficial floodplain values. The wetlands evaluation shall consider factor’s relevant to a proposal’s effect on the survival and quality of the wetlands. Attach additional pages as necessary.

	Impacts to Lives and Property	Impacts to Floodplain/Wetland
Positive: Describe positive or beneficial impacts to the floodplain/wetland, both direct and indirect		
Negative: Describe negative or harmful impacts to the floodplain and/or wetland, both direct and indirect.		
Concentrated: Describe concentrated impacts at or near the floodplain and/or wetland.		
Dispersed: Describe dispersed or remote impacts occurring distant from the floodplain and/or wetland.		
Short-term: Describe short-term impacts to the floodplain/wetland (temporary impacts occurring immediately after an action lasting a short while).		
Long-term: Describe long-term impacts to the floodplain/wetland (impacts occurring during or after an action that persists for considerable time or indefinitely).		

STEP 5 – Where practicable, design or modify the proposed project to *minimize* the potential adverse impacts to lives, property, and natural values within the floodplain/wetland; and to *restore* and *preserve* the values of the floodplain/wetland. (Consult project engineer/architect and/or engineering/architectural report.)

Minimize- “reduce harm to smallest possible degree;” far beyond mitigate or alleviate

Restore- re-establish environment in which natural & beneficial floodplain values can operate

Preserve- prevent modification to natural floodplain or maintain as closely as possible to its natural state

Examples: Minimize fill, minimize grading, restore natural contours, acquire/demolish/relocate non- conforming structures, preserve natural drainage, maintain/restore wetlands and riparian buffers, control urban runoff & storm water discharge, minimize tree cutting, elevate & flood proof structures, scale back size/scope of project, deed restrictions/covenants, permeable surfaces, natural landscape enhancements that maintain or restore natural hydrology, planting or restoring native plant species, bioswales, evapotranspiration, stormwater capture and reuse, green or vegetative roofs with drainage provisions, Natural Resources Conservation Service conservation easements or similar easements, flood proofing of structures, elevating structures including free boarding above the required base flood elevations, etc.

1. Explain the minimization, restoration, and preservation measure that will be taken to protect lives, property, and values of the floodplain/wetland. If a permit is required, state the permit and describe its requirements. Attach additional pages as necessary.

STEP 6 – Re-evaluate alternatives identified in Step 3.

1. Is the project still feasible (in light of the impacts to floodplain/wetland determined in Step 4 and the minimization, restoration and preservation opportunities identified in Step 5)?

2. In light of Steps 4 & 5, do alternatives previously reject in Step 3 appear feasible? Compare adverse impacts of alternatives. The reevaluation of alternatives shall include the potential impacts avoided or caused inside and outside the floodplain or wetland area. The impacts should include the protection of human life, real property, and the natural and beneficial functions and values served by the floodplain or wetland. A reevaluation of alternatives under this step should include a discussion of economic costs. For floodplains, the cost estimates should include savings or the costs of flood insurance, where applicable; flood proofing; replacement of services or functions of critical actions that might be lost; and elevation to at least the base flood elevation for sites located in floodplains. For wetlands, the cost estimates should include the cost of filling the wetlands and mitigation.

3. If neither proposed project nor alternatives are acceptable, the chosen alternative is “No Action.”

STEP 7 – If re-evaluation results in no practicable to relocate the project out of the floodplain/wetland, the decision must be made public: Notice of Explanation.

Notice must include:

- Reasons why project must be located in floodplain
- Alternatives considered and locations by address
- All mitigation to be taken and actions to actions to restore and preserve natural and beneficial values

If the RE receives comments, the RE must consider the comments, respond in writing, and provide copies to CDBG. Attach a copy of the notice, affidavit of publication and/or tear sheet, and proof of distribution to environmental agencies and Tribes.

Name of Newspaper: _____ Date of publication: _____

Were comments received in response to the notice?

☐ YES

☐ NO

If “Yes”, explain and attach all correspondence:

STEP 8 – Implement the Project

When compliance has been demonstrated and the release of funds has been issued, the project may be implemented. The RE has a continuing responsibility to ensure that the mitigating measures identified in Step 7 are implemented. Mitigation measures must be incorporated, as appropriate, in project contracts and all related agreement documents.

COASTAL ZONE MANAGEMENT

There are no Coastal Zones in Missouri.

Compliance Documentation: [NOAA Coastal Management](#)



States and Territories Working on Ocean and Coastal Management

Click on a state or territory below to see what we're doing to manage your state's oceans and coasts.



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AIRPORT HAZARDS

24 CFR Part 51 Subpart D

Runway Protection Zone (RPZ)- area immediately beyond the ends of FAA civilian airport runways

Clear Zone (CZ)- area immediately beyond ends of military airfield runway

Accident Potential Zone (APZ)- are immediately beyond the Clear Zones of military airfield

1. Is the project within 2,500 feet of the end of a civilian airport or 15,000 feet of a military airport?

☐ YES ☐ NO

*For Civil Airports- applies to all commercial service airports as designated in the [National Plan of Integrated Airport System \(NPIAS\)](#)- shown as "P" and "CS"; does not apply to other designations

2. Is the project located within a Runway Protection Zone, Clear Zone, or Accident Potential Zone?

☐ YES ☐ NO

3. For projects within APZ:

- A. Do project activities, regardless of funding source, involve new construction; substantial rehabilitation; acquisition of undeveloped land; activities that would significantly prolong the physical or economic life of existing facilities or change the use of the facility to a use that is not consistent with the recommendations of the Department of Defense (DOD)'s Land Use Compatibility Guidelines; activities that would significantly increase the density or number of people at the site; or activities that would introduce explosive, flammable, or toxic materials to the area?

☐ YES ☐ NO

☐ N/A

*If "Yes," the project must be in conformance with [DOD guidelines](#) to proceed at this location.

For projects within RPZ/CZ:

- B. Does the project consist of only facilities that will not be frequently used or occupied by people?

☐ YES ☐ NO

*If "Yes," obtain written assurance by the airport operator that there are no plans to purchase the land involved as part of a RPZ/CZ acquisition program.

☐ N/A

- C. Does the project consist solely of minor rehabilitation (<75% pre-rehab value), purchase, sale, or rental of an existing property without significantly prolonging the physical or economic life of the property?

☐ YES ☐ NO

*If "Yes," include a statement signed by buyer indication receipt of [notification of airport hazards](#).

☐ N/A

*If "No" to 3B and 3C, the project cannot proceed at this location.

Compliance Determination Summary: *Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region)*

ENDANGERED SPECIES
Endangered Species Act (ESA), Section 7 - 50 CFR Part 402
[Endangered Species Act of 1973](#)

1. Generate an official species list using U.S. Fish and Wildlife Service's [IPac](#) tool AND a [Missouri Natural Heritage Report](#).
2. Determine if the project will affect threatened species, endangered species, or critical habitat using USFWS's [Effect Determination Tool](#). Indicate which level of effect the project will have:
 - ☐ No Effect → *provide documentation, no consultation required*
 - ☐ May affect, but not likely to adversely affect → *submit a letter to USFWS and MDC with a written analysis of effects, requesting concurrence*
 - ☐ May affect, likely to adversely affect → *formal consultation with USFWS and MDC required, including biological opinion, potential jeopardy determination and incidental take statement*

If a "May Affect..." determination was made, explain all mitigation measures or explain why mitigation is not necessary.

Compliance Determination Summary: *Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region)*

WILD AND SCENIC RIVERS
Wild and Scenic Rivers Act of 1968 36 CFR Part 297

1. Is the project within proximity to any of the following rivers or river segments and their respective tributaries *(include a map of all rivers, segments, and tributaries in the jurisdictional county of the project site, with site clearly indicated)*

- A. [Wild and Scenic Rivers](#)- (the Eleven Point River is the only one in Missouri)
B. [Study Rivers](#)- (there are currently none in Missouri)
C. [Nationwide Rivers Inventory](#)- (state designated river segments)

☐ YES	☐ NO
☐ YES	☐ NO
☐ YES	☐ NO

2. If so, could the project do any of the following?

☐ YES	☐ NO
------------------------------	-----------------------------

- Have a direct and adverse effect within Wild and Scenic River Boundaries,
- Invade the area or unreasonable diminish the river outside Wild and Scenic River Boundaries, or
- Have an adverse effect on the natural, cultural, and/or recreational values of a NRI segment (this can be determined by consulting the River Management Plan for the River or River segment in question to determine the River's outstanding values)?

If the project could impact the Eleven Point River as determined in question 2, please contact the U.S. Fish and Wildlife Service.

If the project could impact a River listed on the Nationwide River Inventory as determined in question 2, please contact the National Park Service.

Explain all required mitigation measures resulting from consultation with either of the above entities:

Compliance Determination Summary: *Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region)*

FARMLAND PROTECTION
[Farmland Protection Policy 7 CFR 658](#)

1. Does the project involve new construction, acquisition or disposition of undeveloped land, or conversion that could potentially convert one land use to another? ☐ YES ☐ NO
2. If yes to Question 1, does your project meet one or more of the following exemptions?
- Construction limited to on-farm structures needed for farm operations ☐ YES ☐ NO
- Construction limited to new minor secondary (accessory) structures such as a garage or storage shed ☐ YES ☐ NO
- Project on land used for water storage ☐ YES ☐ NO
- Project on land already in or committed to urban development (land with a density of 30 structures per 40-acre area; lands identified as “urbanized area” (UA) on the Census Bureau Map; as urban area mapped with a “tint overprint” on the USGS topographical maps; or as “urban-built-up” on the USDA Important Farmland Maps ☐ YES ☐ NO
3. If yes to Question 1 and no to Question 2, does “**[Important Farmland](#)**” (including prime farmland, unique farmland or farmland of statewide or local importance) regulated under the **[Farmland Protection Policy Act \(FPPA\)](#)** occur on the project site? ☐ YES ☐ NO
- If “Yes,” consider alternatives to completing the project on important farmland and means of avoiding impacts to Important Farmland and submit a completed **[AD-1006 “Farmland Conversion Impact Rating” Form](#)** to USDA Natural Resources Conservation Service. Notify the state soil scientist prior to sending.

Explain all required mitigation measures resulting from consultation with NRCS:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, current land use of project site, etc.)

NOISE CONTROL
24 CFR Part 51 Subpart B

1. Is the proposed project a noise sensitive land use (residential, school, day care center, community center, library, hospital, nursing home, auditorium, health clinic, shelter, etc)? ☐ YES ☐ NO

2. Is the proposed project located within proximity of the following major noise sources? Provide a map with the following major noise sources identified in proximity to the project site. ☐ YES ☐ NO

☐ Within 1,000 feet of a major roadway (high volume traffic, heavy truck traffic, etc.)

☐ Within 3,000 feet of a railroad

☐ There is a designated quiet zone in the area of the project.

☐ Within 15 miles of an airport with 9000 or more enplanements per year

☐ Other significant noise sources: _____
(Industrial/manufacturing facilities; power generating stations; recreational facilities such as racing speedways/ tracks, and motorcycle trails, etc.)

If "Yes" to #1 and #2, complete a Noise Assessment, explain the outcome, and describe all resulting mitigation:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, etc.)

EXPLOSIVE AND FLAMMABLE OPERATIONS

24 CFR Part 51 Subpart C

1. Hazardous facilities included in the project:

A. Does the proposed project include a hazardous facility (a facility that mainly stores, handles, or processes flammable or combustible chemicals such as bulk fuel storage facilities and refineries)? ☐ YES ☐ NO

B. If so, is the hazardous facility located at an Acceptable Separation Distance (based on standards in the regulation) from residences and any other facility or area where people may congregate or be present? ☐ YES ☐ NO

2. Aboveground stationary storage tanks near the project:

A. Does this project include any of the following activities: (1) development, construction, or conversion of any project intended for residential, institutional, recreational, commercial, or industrial use; (2) rehabilitation or modernization that will increase residential densities or make a building habitable; or (3) any project activity that will encourage congregation of people in an outdoor, unprotected facility? ☐ YES ☐ NO

B. If "Yes," are there any current or planned stationary aboveground storage containers:

- Of more than 100 gallon capacity, containing common liquid industrial fuels, or
- Of any capacity, containing hazardous liquids or gases that are not common liquid industrial fuels?

☐ YES ☐ NO

Include a map showing all above ground storage containers in proximity to the project site within a one mile radius.

C. If "Yes", is the Separation Distance from the project acceptable based on standards in the regulation? ☐ YES ☐ NO

If "No," a barrier is required to mitigate the project, or it should be moved to a different location.

Detail all mitigation measures that will be implemented, including the timeline for implementation:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, current land use of project site, etc.)

WATER QUALITY

40 CFR Part 149

There are no sole source aquifers in the State of Missouri

Designated Sole Source Aquifers in EPA Region VII

Iowa, Kansas, Missouri, Nebraska


REGION VII (IA, KS, MO, NE) Stephanie Lindberg Drinking Water/Ground Water Branch EPA Region 7 901 N. 5th Street Kansas City, KS 66101 phone: (800) 223-0425 email: lindberg.stephanie@epa.gov <i>There are no designated Sole Source Aquifers in Region VII. Contact the coordinator above for more information about designating SSAs in Region VII.</i>

AIR QUALITY
40 CFR Parts 6, 51, 93

1. Is the project in an **EPA-designated nonattainment** or maintenance area for any criteria pollutants? ☐ YES ☐ NO

2. If "No," could create emissions impairing the air quality of an area already in attainment? ☐ YES ☐ NO

If "Yes" to question 1, does the project include five or more dwellings OR new construction or conversion of land use facilitating the development of public, commercial, or industrial facilities units that will involve the potential for air emissions or a significant traffic increase? ☐ YES ☐ NO

3. If "Yes" to either of the scenarios in question 2, obtain a determination from the EPA Region 7 State Air Program and the DNR Air Pollution Control Program that proposed activities conform to the State Implementation Plan. ☐ YES ☐ NO

ASBESTOS:

1. Does the project involve demolition or renovation of buildings or bridges or removal of asbestos water or sewer pipes where the disturbed area is greater than 260 linear feet or 160 square feet? ☐ YES ☐ NO

If "Yes," a Missouri DNR Certified Asbestos Inspector must be hired to perform a thorough asbestos inspection. If friable asbestos containing materials are present and require removal, a Missouri registered asbestos abatement contractor must be hired.

MOLD:

1. Does the project entail rehabilitation of any building with evidence of mold on any building component, or an interior moisture-related problem, including roof leaks or moisture in and around the interior foundation or crawl space? *Document a site visit and attach color photos.* ☐ YES ☐ NO

Explain all required mitigation measures and/or required permits required for nonattainment, asbestos, and mold:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, potential for the project to encourage further development in the area, sources, types, and amounts of emissions associated with the finished project, potential for odors and fumes produced by the finished project or surrounding areas, etc.)

CONTAMINATION AND TOXIC MATERIALS

NEPAssist Mapping Layer Descriptions, 24 CFR 58.5(i) (2)

*Removal of Hazardous Waste must comply with the [DNR Universal Waste Rule](#)

1. Is fill/borrow material required for the project? ☐ YES ☐ NO

If "Yes," complete a separate "Contamination and Toxic Materials" worksheet for the fill site.

2. Explain previous uses of the project site and attach acceptable documentation: *(historical research of property, information from prior land owners, deed, title, easements, liens, aerial photographs, etc.)*

3. A Phase I ESA should be completed if the site meets any of the following criteria. List the websites the ER preparer uses to verify contamination and/or toxic materials, such as Superfund, eStart, Landfills, Underground Storage Tanks (UST), Enforcement and Compliance History Online (ECHO), U.S. Environmental Protection Agency (EPA), Envirofacts, etc.

- ☐ Involves new construction of a facility that will be occupied by people
- ☐ Within 1 mile of a [Superfund Site](#)
- ☐ Within 1 mile of a MO Department of Natural Resources ([MO DNR](#)) [eStart](#) active site
- ☐ Within 0.5 mi. of a Toxic Release, Brownfield, Long-term Stewardship, or Inactive Voluntary Cleanup Program (VCP) site
- ☐ Within 0.5 mi. of a Leaking UST
- ☐ On or adjacent to any MO DNR eStart hazardous substance or storage tank site.
- ☐ Has an [underground storage tank](#)
- ☐ Hazardous substances, pollutants, or contaminants have been stored or dumped on the site
- ☐ Is near an industry or in an industrial area disposing of chemicals and/or hazardous waste
- ☐ Within 0.5 mi. of a [landfill site](#)

4. If one of the above criterion was selected, but a Phase I ESA has/will not be completed, please indicate why.

5. Phase I:

a. Has a current ASTM 1527-13 Phase I ESA been completed? ☐ YES ☐ NO

b. Based on the Phase I, does contamination exist or is suspected to exist at the site?

☐ YES ☐ NO

6. Phase II:

A. Is a Phase II Assessment recommended?

☐ YES ☐ NO

B. Has a Phase II Assessment already been completed?

☐ YES ☐ NO

C. Based on the Phase II Assessment, does contamination exist at the site?

☐ YES ☐ NO

7. If present, explain if contamination will affect the health and safety of occupants or conflict with intended use of the site, how it will be addressed, and/or any contamination cleanup procedures and mitigation and whether the cost and timeline for cleanup are feasible for the project.

LEAD-BASED PAINT:

Does the project involve any activities done for compensation that disturbs painted surfaces (includes most repair, remodeling, and maintenance activities, as well as weatherization and demolition) to residential houses, apartments, and child-occupied facilities built before 1978?

☐ YES ☐ NO

If “Yes,” requirements associated with the [Renovation, Repair, and Painting Program Rule](#) must be followed, including testing all affected surfaces coated with paint, shellac, varnish, stain, coating or even paint covered by wallpaper, if it will be disturbed during the renovation work, and the use of an EPA “Certified Renovator.”

*For projects involving rehabilitation, rental assistance, homebuyer assistance, leasing, or support services for a residential property or the operation of emergency shelters, please use [the Lead Rule Compliance Advisor](#) to determine compliance with HUD’s Lead Safe Housing Rule.

*Presence of lead should be considered for painted bridges and water towers and soil of child-occupied facilities.

RADON:

1. Does the project entail new construction for residential purposes, long term occupancy of people, or schools?

☐ YES ☐ NO

If Yes, radon testing, radon resistant construction practices and/or a radon mitigation system for levels 4.0 picocuries per liter or higher is required.

2. Does the project entail substantial rehabilitation to any building for residential purposes, long term occupancy of people, or schools?

☐ YES ☐ NO

If Yes, radon testing, radon resistant construction practices and/or a radon mitigation system for levels 4.0 picocuries per liter or higher is required.

Explain all mitigation measures and/or required permits required for contamination and toxic materials, lead-based paint, and radon:

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, etc.)

ENVIRONMENTAL JUSTICE

Executive Order 12898

***HUD strongly encourages starting the Environmental Justice analysis only after all other laws and authorities, have been completed.**

1. Were any adverse environmental impacts identified in the preceding compliance review portion of this environmental review? ☐ YES ☐ NO
2. If yes to Question 1, were these adverse environmental impacts disproportionately high for low-income and/or minority communities? Include maps showing project area's income and minority levels. ☐ YES ☐ NO
☐ NA
3. If yes to Question 2, can the adverse impacts be mitigated? ☐ YES ☐ NO
*The affected community should be meaningfully informed and involved in the planning process to address the adverse effects ☐ NA

Compliance Determination Summary: Provide a clear description of your determination and a synopsis of the information that it was based on (e.g. map panel numbers and dates, names of all consulted parties and relevant consultation dates, names of plans or reports and relevant page numbers, any additional requirements specific to your region, etc.)

LAND DEVELOPMENT

1. Conformance with Plans: Briefly explain whether the proposed project conforms to current community plans. Attach relevant pages from community's plan.

2. Compatible Land Use and Zoning: Describe the proposed and adjacent sites' current land use and zoning. Include current zoning map.

3. Scale and Urban Design: If new construction, how will the project conform with the surrounding natural and built environment?

4. Soil Suitability: Briefly explore the soil suitability for the land use associated with this project. Attach geotechnical or soil study.

5. Slope: If the site is on a slope, how will the project be affected and how might the project affect slope conditions? How will they be addressed?

6. Erosion: If site clearance is necessary, explain the measures that will be taken to manage and control it. Describe any erosion control measures at project completion that will be included in the construction contract.

7. Drainage/ Storm Water Runoff: Consider the impact of the project on storm water drainage and the impact of storm water on the project, particularly in regard to the proximity of the system (natural flow, storm sewer, or combined sewer) and the capacity of the system to accommodate the project.

8. Hazards and Nuisances/Including Site Safety and Noise: Describe the considerations made to ensure that the project is located and designed to minimize potential risk to the public or project users from both natural and man-made risks .

9. Energy Consumption: If possible, describe the measures that will be taken to maximize opportunities for energy efficiency associated with the project.

SOCIOECONOMIC

1. Employment and Income Patterns: Describe the potential affect the project will have on local employment, including temporary jobs created during construction, permanent jobs, and the job requirements of the new residents.

2. Demographic Character Changes: Briefly explore the possible effects the project could have on the social networks, institutional ties, and physical dimensions that make up the community(ies) within the area of the likely impact of the proposed project.

3. Displacement: Will the project result in direct or indirect displacement? If so, explain the measures in place to alleviate the hardship associated with the displacement.

COMMUNITY FACILITIES

1. Educational and Cultural Facilities: If the proposed project will directly or indirectly affect growth of the population, discuss whether there is adequate capacity in current schools and safe access to them, as well as any measures that will be taken to mitigate adverse impacts.

2. Commercial Facilities: If the proposed project will directly or indirectly affect growth of the population, explain if existing commercial facilities are adequate. For Economic Development projects, explain the implications the project will likely have on surrounding commercial establishments.

3. Health Care: If the proposed project will directly or indirectly affect growth of the population, consider the access to and capacity of emergency and non-emergency health care services.

4. Social Services: If the project will result in new residents/users of social services, consider the availability and accessibility of appropriate services.

5. Solid Waste Disposal/Recycling: Describe the waste associated with all phases of the project, as well as how it will be handled.

6. Waste Water/Sanitary Sewers: For all new development, consider the availability of adequate wastewater disposal services.

7. Water Supply: For all new development, consider the availability of adequate wastewater disposal services and whether the water requirements of the project will significantly impact the community's water supply.

8. Public Safety- Police, Fire, and Emergency Medical: If the proposed project will directly or indirectly affect growth of the population, consider the availability and adequacy of emergency service that may be required at the proposed project.

9. Parks, Open Space, and Recreation: If the proposed project will directly or indirectly affect growth of the population, consider the availability of and ease of access to recreation spaces, open spaces, and cultural resources.

10. Transportation and Accessibility: Assess the transportation impacts of the project in regard to the four sub-elements of transportation—access, balance, safety, and level of service.

NATURAL FACILITIES

1. Unique Natural Features: Will the project location, construction, or its users destroy, isolate from public or scientific access, or adversely impact unique or locally important natural features on or near the site?

2. Water Resources: Describe the project's potential effect on groundwater and surface water, with particular consideration to impervious surfaces, runoff, and nearby streams and other water sources.

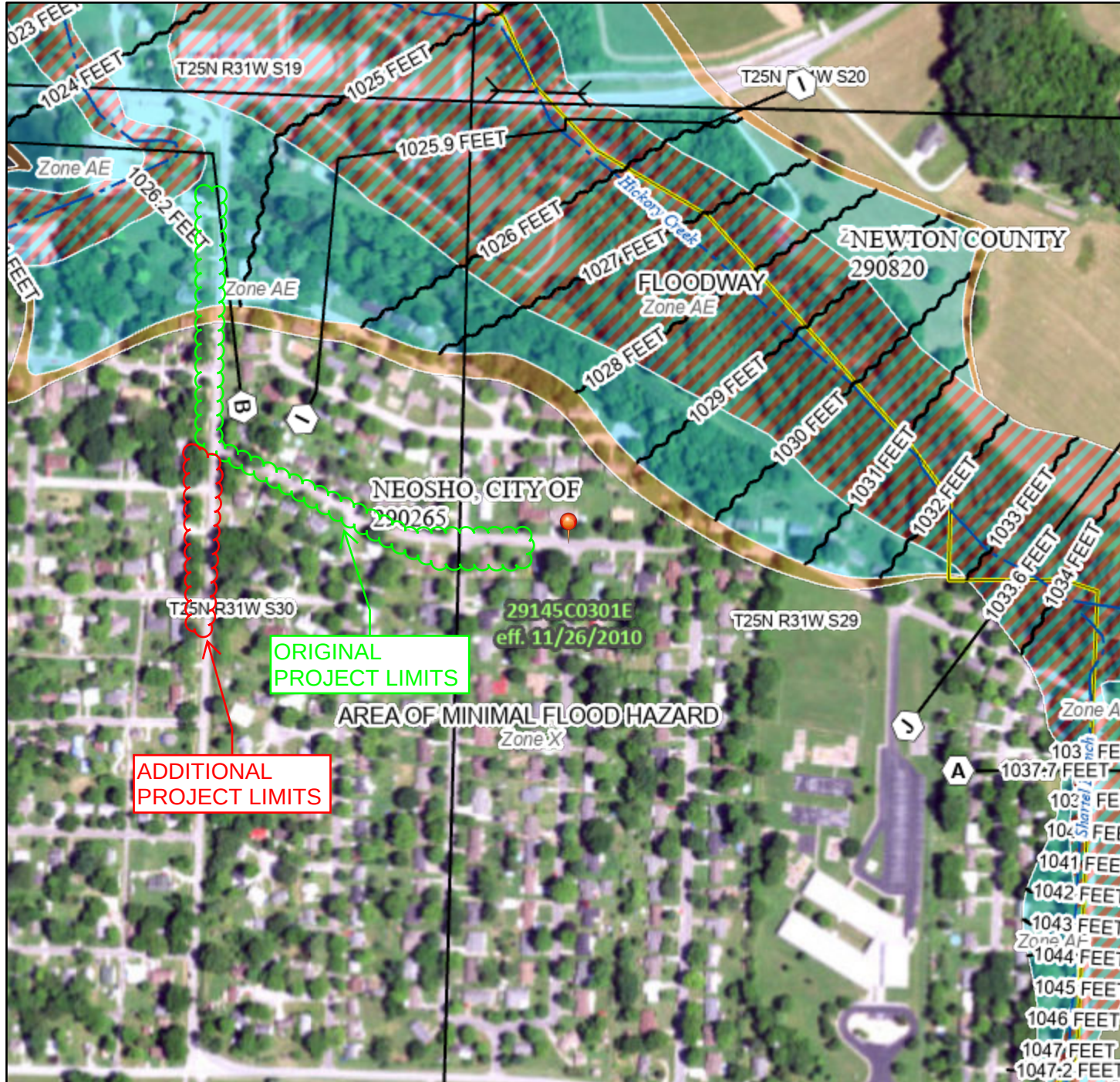
3. Vegetation: Consider the project's impacts to vegetation, including site clearance. Describe mitigation measures

4. Wildlife: Consider the project's impacts to wildlife, including site clearance. Describe mitigation measures.

National Flood Hazard Layer FIRMette



94°21'32"W 36°51'57"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
MAP PANELS		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/22/2023 at 5:23 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Irrigation Water Intake Repair

ORIGINATING DEPARTMENT: City Manager

ATTACHMENT:

1. Bids for Golf Course Water Intake

PURPOSE:

Accept bid for CSG for intake structure rebuild.

BACKGROUND:

The intake structure supplies water to the irrigation system for the entire golf course. Over the years, the intake structure has deteriorated and needs rebuilding. Also, the area around the structure needs dredging, and the lake banks need redesigning.

RECOMMENDATION:

Accept the bid with CSG as presented.

BID FORM

Description: (To be completed by bidding party)

Base Bid: Neosho Golf Course Landscape Pond per Bid Specifications. Total Cost: \$29,863.00

Alternate Bid (If Required): Repair #16 Fairway and replacement of cart path, as required. Total Cost: \$4,438.00

COMBINED BID (If Alternate is selected). \$34,301.00

Price(s) for unit(s) meeting enclosed specifications: ~~\$37,521.00~~

F.O.B. Neosho, MO

Projected Shipping Date: Within in 14 days of Notice to Proceed

After delivery - payment made on third Tuesday of month delivered

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted).

COMPANY: Marion Company, LLC d/b/a Construction Services Group

ADDRESS: 12451 Highway 59, Neosho, Missouri 64850

PHONE: (417) 451 - 5743

EMAIL: tyler.marion@marionllc.net

BY: Tyler Marion, VP

BID FORM

Description: (To be completed by bidding party) \$87,000

Create dam Just outside of Highlighted area to be excavated. Pump water out. Excavate Sediment in bottom of pond. Repair irrigation intake & screen. Bring in new Rip Rap for easy removal & Maintenance of intake. Haul off sediment. Re fill drained portion & Remove dam. Clean Roadways & Bring in Topsoil to finish around with new Bermuda seed.

Price(s) for unit(s) meeting enclosed specifications:

F.O.B. Neosho, MO

Projected Shipping Date: Feb 26 2024 or Sooner

After delivery - payment made on third Tuesday of month delivered

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted).

COMPANY: Ground UP Services

ADDRESS: 1103 E. Java Carthage MO 64836

PHONE: 417-439-1009

EMAIL: gage@Groundupservice.com

BY: Gage Gorton



Proposal #901

Golf Course Pond Intake Repair

Date 1/25/2024

Customer David Kennedy | City of Neosho | 1850 clubhouse rd., 203 east main st. | Neosho, MO 64850

Property Neosho Golf Course | 1850 clubhouse rd., 203 east main st. | Neosho, MO 64850

At Ground Up we strive to offer the highest quality materials and an honest service that you can count on. We have over 20 years of experience offering the following services.

- Lawn Maintenance
- Fall and Spring Clean Up
- Landscaping
- Drainage Work
- Dirt Work
- Sod
- Ponds and Water Features
- And More

No project is too small or too big! We are happy to find a solution that fits both your needs and your budget.

Our work is never complete until you're 100% satisfied!

Mission Statement: A team that delivers professional results with honest and clear expectations. While being devoted to excellence in quality and safety.

Services Billed Upon Completion

Description	Frequency	Cost per Occ.	Annual Cost
Pond Rehab			
Excavation Services		\$67,978.51	\$67,978.51
Pond Upgrades		\$12,446.69	\$12,446.69
Sod Install		\$6,574.80	\$6,574.80
Total Price			\$87,000.00

Payment Schedule

Schedule	Price	Sales Tax	Total Price
Deposit	\$29,000.00	\$0.00	\$29,000.00
Final Payment	\$58,000.00	\$0.00	\$58,000.00
	\$87,000.00	\$0.00	\$87,000.00

Services

Excavation Services

- Dam up portion of leg for irrigation intake.
 - This allows for the area to be pumped down.
 - This dam will be removed upon completion of work.
- Pump out area to be dredged.
- Excavate bottom of pond bed to remove sediment as needed.
 - Haul off all spoils.

Pond Upgrades

- Bring in rip rap to build up northside of the area.
- Rebuild intake pipe screen system.
 - To allow for necessary maintenance.

Sod Install

- Bring in topsoil to fix disturbed surfaces.
 - Prep for laying sod.
- Lay Bermuda sod around the pond.
 - Only on areas disturbed by work done.

Terms & Conditions

Golf Course Pond Intake Repair work to be done at 1850 clubhouse rd. Neosho, MO 64850. Ground Up will furnish all labor, materials, and equipment needed to complete the job as proposed. We will guarantee all labor. All materials will be guaranteed per manufacturer recommendations. Proposal requires 1/3 deposit to schedule and order materials for the job. Deposits are non-refundable within 30 days of scheduled start date. Prior to 30 days the deposit will be returned minus materials purchased.

Change orders will require 50% payment due before any work on that phase commences.

Ground Up will not guarantee any live product or seeding. We will not guarantee any transplanted trees or shrubs. Upon completion it is the responsibility of the property owner to ensure the establishment of turf or plant materials. Proper care techniques will be provided once the work has been completed. Ground Up assumes no responsibility for natural materials such as topsoil, sand, mulch, and gravel. These can have inconsistencies due to being natural. The total for this proposal is 87000.00.

Due to rapidly changing cost in materials, pricing may be subject to review if work is not completed within 30 days of the proposed date.

By _____
Gage Girton
Date 1/25/2024
Ground Up Services LLC

By _____
Date _____
Neosho Golf Course



City of Neosho

203 E. Main St.
Neosho, MO 64850
(417) 451-8050 phone
(417) 451-8065 fax
www.neoshomo.org

INSTRUCTIONS TO BIDDERS

The City of Neosho, Missouri will accept sealed bids until **Friday, January 26, 2024 at 10:00 a.m.** at the Receptionist Desk of City Hall, Attn: City Clerk, 203 East Main Street, Neosho, MO 64850. The bid will be for the following:

Project: Neosho Golf Course All Irrigation Water Intake Repair

Please label the envelope: Golf Course All Irrigation Water Intake Repair Opening January 26, 2024 @10:00 a.m.

Questions concerning the specifications and bid procedure should be directed to David Kennedy, City Manager, at the follow address/phone: 417-451-8050, 203 E. Main St. Neosho, MO 64850.

All bids shall be F.O.B., Neosho, MO. All bids shall be exclusive of federal, state, and city taxes. Bids on this (these) unit(s) shall be made on forms furnished with these specifications. Additional information, specifications, deviations, and manufacturer's literature should be attached to bid forms. All bids should include the turnaround time in getting started on this project. **There will be a pre-bid meeting at the Neosho Golf on Tuesday, January 9, 2024 at 9 a.m.**

In section 605.040 of the City of Neosho code, it states that if a contractor performs work for the City a performance bond is required.

Section 605.040 Certain Insurance Policies, Etc., Required Before Issuance of Licenses for Plumbers, Electricians, Contractors, and Subcontractors is amended to read as follows:

"A. In addition to payment of the license fees required of plumbers, electricians and general and special contractors and subcontractors in Section 605.010, before a plumber's, electrician's or general or special subcontractor's license may be issued to any applicant, each applicant shall produce for the inspection and approval of the City Collector the following policies of insurance together with receipts showing the premiums fully paid for the period for which the license is sought:

1. Bodily injury insurance liability coverage of twenty-five thousand dollars (\$25,000.00) per incident.
2. Property damage, twenty-five thousand dollars (\$25,000.00).
3. Bonding requirements.

a. If a contractor performs work within the City limits of Neosho, a license and permit bond, ten thousand dollars (\$10,000.00).

b. Unless otherwise provided, if a contractor performs work for the City of Neosho, the cost of which is estimated to exceed fifty thousand dollars (\$50,000.00), a performance bond running to the City, to the contract amount.

B. In addition to the requirements set forth above by this Section and the license fees required to be paid, each applicant for a plumber's license shall comply with all provisions of the Plumbing Code of the City."

If this project is in reference to a Stormwater Runoff Project, please reference Section 430.188 of City Code that states:

A. *Performance Bonds and Other Assurances for Completion of Stormwater Management Improvements.* Upon approval of the Final Stormwater Management Plan, but before the issuance of building permit, the City Building Inspector may require the applicant to post a performance bond, cash escrow, certified check, or other acceptable form of performance security for the amount of the work to be done pursuant to the approved Stormwater Management Plan.

B. *Maintenance Agreement.* A maintenance agreement, approved by the Governing Body of the City of Neosho, assuring perpetual maintenance of stormwater management improvements shall be agreed upon by the City and the applicant, if the facilities are to be maintained by the developer.

C. *Maintenance Bond.* A two (2) year maintenance bond against defects in workmanship may be required by the City for any portion of the stormwater management improvements dedicated to the public.

*Missouri Prevailing Wage Rate if over \$75,000.00 (*A copy of the Missouri Prevailing Wage Rate is attached*)

*Payment Bond Required for projects over \$50,000.00

*City of Neosho Business License required

*W-9 Required

* Proof of Workers Compensation Coverage Provided w/ Bid

The City reserves the right to reject any or all bids and to accept the lowest or best bid. The City reserves the right to split bids, if in the best interest of the City.

Thank you,

David Kennedy
City Manager

BID SPECIFICATIONS:

The bid packet is for the purchase of:

Neosho Golf Course Landscape Pond

BID ITEMS:

Pump down existing Pond located on Hole #15, Clean existing silt from bottom of pond at defined area, Install rip rap at defined area for bank and bottom stabilization, Reconstruct existing intake with winch system.

Notes:

1. *Prospective bidders are responsible for verifying exact quantities and footages. The above quantities and areas are for reference only. Bidders shall visit the site, meet with Owner, and confirm measurements prior to bidding.*
2. *Contractors shall be responsible for demolition of the existing floor coverings and baseboard and shall dispose of offsite at their own expense.*
3. *Bidders shall include all necessary items for complete scope of work.*

Pictures included

Equipment Schedule:

Note:

This bid should include the start date for this project.



City of Neosho

203 E. Main St.
Neosho, MO 64850
(417) 451-8050 phone
(417) 451-8065 fax
www.neoshomo.org

Bid packets mailed to the following vendors for BIDS:

Construction Services Group
Tyler Marion
12451 Hwy 59
Neosho, MO 64850

Branco Enterprises
P. O. Box 459
Neosho, MO 64850

Bryan Ward
P. O. Box 487
Neosho, MO 64850

Burkhart Construction
P. O. Box 1787
Joplin, MO 64802

R E Smith
1036 West 2nd Street
Joplin, MO 64801

Jim Durbin Construction
15065 Hwy CC
Neosho, MO

Major Enterprises
Sam Major
P. O. Box 502
Neosho, MO 64850

Neosho Golf Course

Perimeter: 215 LF

Area: 2,960 SF

Legend

 Polygon Measure

Google Earth

Image © 2023 Airbus



100 ft





REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Fairway Mower

ORIGINATING DEPARTMENT: City Clerk

ATTACHMENT:

1. Bids Fairway Mowers

PURPOSE:

Reject all submitted bids.

BACKGROUND:

It is the recommendation to reject the bids as presented. In determined with Maxim golf we have determined other needs which will take priority over this purchase.

RECOMMENDATION:

Reject the bids as presented.

BID FORM

Description: (To be completed by bidding party)

Professional Turf Products is submitting a bid for the following:
(2) used Fwy Mowers sold "as-is". Units are in Kc & can be
delivered as soon as schedule allows. No warranty but guaranteed to
(1) Toro 6500 - Model: 03806 S/N: 310000114 2010 - 2133 hrs. ^{start and run.}

(1) Toro 6500 - Model: 03806 S/N: 313000116 2013 - 1591 hrs.

Both units: 11-blade Reels, 96" cut width, 38 hp Diesel, 2 WD

* \$18,550 for Both units *

- Good Condition
- Low Hours
- 2 machines

Price(s) for unit(s) meeting enclosed specifications:

F.O.B. Neosho, MO

Projected Shipping Date: Feb. 2024

After delivery - payment made on third Tuesday of month delivered

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted). - Machines do not meet desired year, but are in good condition and have been maintained properly. Low Hours.

COMPANY: Professional Turf Products

ADDRESS: 10935 Eichler Dr. Lenexa, KS 66219

PHONE: (682) 208-0496

EMAIL: thomasj@proturf.com

BY: Josh Thomas 1/25/24



Professional Turf Products, L.P.

10935 Eicher Dr.
Lenexa, Kansas 66219
Josh Thomas
(682) 208-0496
thomasj@proturf.com



Count on it.



Ship To	City of Neosho	Date:	1/25/2024
Bill To	Sourcewell Cooperative - No Credit Cards Accepted	Tax Rate	
Contact	David Kennedy	Destination	Included
Address	203 E. Main St. Neosho, MO 64850	Trade-In	
Phone	(417) 451-8050	Finance	
Email	d.kennedy@neoshomo.gov	Account Type	Contract
Comments:	Applicable Property and Sales Tax Not Included. Quote inclusive of equipment setup and delivery to Neosho, MO address identified. Sourcewell Cooperative Contract #031121-TTC; City of Neosho ID #32689. Both units sold "As-Is" with No Warranty Provided but Guaranteed to start and run.		

Proposal

Qty	Model #	Description	Selling Price
1	TAG-251-074	RM6500 Model: 03806 S/N: 310000114	
1	TAG-251-075	11-Blade Reels, 2133 Hours RM6500 Model: 03806 S/N: 313000116 11-Blade Reels, 1591 Hours Pre-Owned Toro RM6500's	\$ 18,550.00
SubTotal			\$ 18,550.00
Destination Tax (Estimated)			Included
TOTAL			\$ 18,550.00

Comments:

For all New Equipment, Demo units may be available for up to 20% savings.
For all New Equipment, Refurbished units may be available for up to 40% savings.
Due to unexpected issues with much of our supply chain, we are experiencing longer lead times than we have seen in the past. We are doing everything we can to get products to you as quickly as possible.

Terms & Conditions:

- Prices & Finance Rates are subject to change at any time. Monthly Payments are Estimates based on Prices & Rates when quoted.
- Due to the volatility of inflation, rising transportation costs, and supply shortages, some orders may incur additional cost increases that are beyond the control of PTP and the vendors we represent. These pricing adjustments may be made from the time the order is entered through equipment delivery. Any adjustments will be communicated to customers with orders in the system with a new sale price as they occur.
- Order cancellations are subject to fees up to 10% of the original order value.
- Equipment delivery time is estimated once credit is approved & documents are executed & is contingent on Manufacturer availability.
- Payments by Credit Card are subject to convenience fee.
- Used and Demo equipment is in high demand and availability is subject to change.
 - Upon firm customer commitment to purchase & credit is approved, said equipment availability will be determined.
 - In the event equipment is unavailable at time of order, PTP will employ every resource to secure an acceptable substitute.
 - PTP strongly advises the customer to issue a firm PO as quickly as possible after acceptance of quotation.
- "Trade In Allowances" will be treated as a credit for future parts purchases on PTP account unless other arrangements have been made.

Returns Policy:

- All returns & Canceled PO's are subject to restocking, refurbishing, usage, and shipping fees.
- All returns must be able to be sold as new.
- Items missing parts are non returnable.

Payment:

- Terms are net 10 unless prior arrangements have been made.
- Quoted prices are subject to credit approval.
 - PTP will work with third party financial institutions to secure leases when requested to do so.
 - When using third party financiers, documentation fees & advance payments may be required.
 - For convenience, monthly payments are estimated based on third party rate factors in effect at time of the quotation.
 - PTP assumes no liability in the event credit becomes unavailable or rates change during the approval process.
- There will be a service charge equal to 1.5% per month (18% per annum) on all past due invoices.
- By Law we are required to file a "Notice to Owner" of our intent to file lien in the event of payment default. This notice must be sent within 60 days of the date the original invoice and will happen automatically regardless of any special payment arrangements that may have been made.

Authorized Signature: _____

Date: _____

BID FORM

Description: (To be completed by bidding party)

2019 John Deere 7700A Fairway Mower

- 1800 hours plus or minus 200 hours

- 2A7 10-Blade Cutting Units

- 2WD Traction Unit

- 3" Grooved Front Rollers

Availability not guaranteed on used pieces.

Price(s) for unit(s) meeting enclosed specifications:

F.O.B. Neosho, MO

Projected Shipping Date: 3/10/2024

After delivery - payment made on third Tuesday of month delivered

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted).

COMPANY: VAN WALL EQUIPMENT

ADDRESS: 9650 DICE LANE, LENEXA, KS 66215

PHONE: 417-770-0289

EMAIL: matt.strong@vanwall.com

BY: MATT STRONG



Quote Summary

Prepared For:

NEOSHO GOLF COURSE
1850 CLUBHOUSE RD
NEOSHO, MO 64850
Business: 417-451-8072

Prepared By:

Matt Strong
Van-Wall Equipment, Inc.
9650 Dice Lane
Lenexa, KS 66215
Phone: 913-397-6009
Mobile: 417-770-0289
matt.strong@vanwall.com

Quote Id: 30192823

Created On: 05 January 2024

Last Modified On: 05 January 2024

Expiration Date: 15 February 2024

Equipment Summary	Suggested List	Selling Price	Qty	Extended
2019 JOHN DEERE 7700A PRECISIONCUT FAIRWAY	\$ 48,950.00	\$ 42,000.00 X	1 =	\$ 42,000.00
Equipment Total				\$ 42,000.00

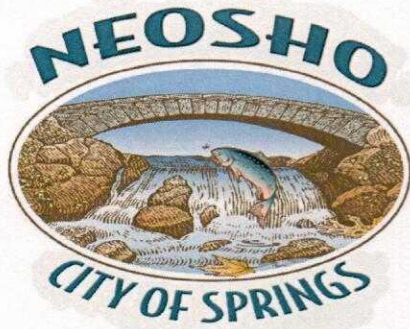
Quote Summary

Equipment Total	\$ 42,000.00
SubTotal	\$ 42,000.00
Est. Service Agreement Tax	\$ 0.00
Total	\$ 42,000.00
Down Payment	(0.00)
Rental Applied	(0.00)
Balance Due	\$ 42,000.00

Salesperson : X _____

Accepted By : X _____

Confidential



City of Neosho

203 E. Main St.
Neosho, MO 64850
(417) 451-8050 phone
(417) 451-8065 fax
www.neoshomo.org

INSTRUCTIONS TO BIDDERS

The City of Neosho, Missouri will accept sealed bids until **Friday, January 26, 2024 at 10:00 a.m.** at the Receptionist Desk of City Hall, Attn: City Clerk, 203 East Main Street, Neosho, MO 64850. The bid will be for the following:

Project: Fairway Mower – Golf Course

Please label the envelope: Golf Course Fairway Mower Bid Opening January 26, 2024 @ 10 a.m.

Questions concerning the specifications and bid procedure should be directed to David Kennedy, City Manager, at the follow address/phone: 417-451-8050, 203 E. Main St. Neosho, MO 64850.

All bids shall be F.O.B., Neosho, MO. All bids shall be exclusive of federal, state, and city taxes. Bids on this (these) unit(s) shall be made on forms furnished with these specifications. Additional information, specifications, deviations, and manufacturer's literature should be attached to bid forms. All bids should include the turnaround time in getting started on this project.

***W-9 Required**

The City reserves the right to reject any or all bids and to accept the lowest or best bid. The City reserves the right to split bids, if in the best interest of the City.

Thank you,

David Kennedy
City Manager

BID SPECIFICATIONS:

The bid packet is for the purchase of:

Fairway Mower for Golf Course

Preowned 2015 or newer model Fairway Mower

Warranty Preferred

2 or 4 wheel drive

Minimum 100 inch cut

Equipment Schedule:

Note:

This bid should include the delivery date for this project.

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Recycle Center Forklift

ORIGINATING DEPARTMENT: Public Works Department

ATTACHMENT:

1. Recycle Center Forklift Bids Recieved

PURPOSE:

The purpose of the item is to seek the Council's approval to purchase a new forklift for the Recycling Center

BACKGROUND:

We currently use an uncommon Chinese brand forklift that has proven very difficult to find parts for when repairs are needed. Staff wanted to seek out a locally supported brand with parts and services readily available.

We sent out multiple bids to local vendors and received 4 back.

B&H Industrial Service Springfield, MO
Clark forklift GTS 25 \$29,970.00

Crown Lift Trucks Springfield, MO
Crown C5P1050-50 \$42,265.50

Octane Forklifts, Inc. Denver, Co
Octane FL25 \$46,070.00

Wiese USA, Duenwig, MO
Wiese GP25 \$36,249.00

The Recycling Center budgeted \$50,000 for this purchase.

RECOMMENDATION:

Staff recommends the Council approve the bid from B&H Industrial Services for the amount of \$29,970.00



City of Neosho

203 E. Main St.
Neosho, MO 64850
(417) 451-8050 phone
(417) 451-8065 fax
www.neoshomo.org

INSTRUCTIONS TO BIDDERS

The City of Neosho, Missouri will accept sealed bids until **FEBRUARY 1st, 2024, at 10:00 am.** at the Receptionist Desk of City Hall, Attn: City Clerk, 203 East Main Street, Neosho, MO 64850. The bid will be for the following:

Project: -5000 lb. PNEUMATIC TIRE LIFT TRUCK

Please label the envelope: 5000 lb. PNEUMATIC TIRE LIFT TRUCK

Questions concerning the specifications and bid procedure should be directed to **Nate Siler, Public Works Director, at the follow address/phone: 417-451-8071, 200 Nelson Ave. Neosho, MO 64850.**

All bids shall be F.O.B., Neosho, MO. All bids shall be exclusive of federal, state, and city taxes. Bids on this (these) unit(s) shall be made on forms furnished with these specifications. Additional information, specifications, deviations, and manufacturer's literature should be attached to bid forms. All bids should include the turnaround time in getting started on this project.

***W-9 Required**

The City reserves the right to reject any or all bids and to accept the lowest or best bid. The City reserves the right to split bids, if in the best interest of the City.

Thank you,

David Kennedy
City Manager

BID SPECIFICATIONS:

The bid packet is for the purchase of:

NEW 5000 LB. PROPANE FORKLIFT

- 33.5 aluminum propane tank
- Equipped with side shift
- 48-inch forks
- 188-inch full free lift triple mast
- Solid pneumatic tires

BID FORM

Description: (To be completed by bidding party)

Clark forklift is over 100 years old as a company.

Clark has a large parts fulfillment center in
Louisville, KY

B&H Industrial is a local family owned company in the
forklift industry for over 32 years with 2 locations
Springfield, MO and Joplin, MO

This unit is currently In Stock

Price(s) for unit(s) meeting enclosed specifications: \$29,970⁰⁰

F.O.B. Neosho, MO

Projected Shipping Date: Unit Currently In Stock

After delivery - payment is made within 30 days of receipt of invoice

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted).

COMPANY: B&H Industrial Service Inc.

ADDRESS: 2645 N LeCompte Rd Springfield, MO 65803

PHONE: 417-862-6960

EMAIL: TBates@bandhustrial.com

BY: Talon Bates

AFFIDAVIT of COMPLIANCE
Section 285.530.2

State of Missouri) ss

County of Greene)

Now this 25th day of January, 2024, the undersigned, being first duly sworn, deposes and says:

1. I am more than 18 years of age.

2. I make this affidavit from my personal knowledge of the facts stated herein or upon information and facts available to me as a duly authorized owner, partner, corporate or LLC officer or Human Relations Director of B & H Industrial Service Inc. (name of Corporation, LLC, sole proprietorship or partnership)

3. I am authorized to make this affidavit on behalf of B & H Industrial Service Inc. (name of business entity, same as above)

4. I state and affirm that B & H Industrial Service Inc. is enrolled and is (name of business entity, same as above) currently participating in E-Verify, a federal work authorization program or another equivalent electronic verification of work authorization program operated by the United States Department of Homeland Security under the Immigration Reform and Control Act of 1986.

5. Further, B & H Industrial Service Inc. does not knowingly employ any person (name of business entity, same as above) who is an unauthorized alien.

6. Further, B & H Industrial Service Inc. has performed an electronic (name of business entity, same as above) verification check as described above on all workers hired since January 1, 2009 or obtained documents required for completion of a federal I-9 form before it began participating in E-Verify.

7. Attached to this affidavit is a true and accurate copy of this company's Memorandum of Understanding with the United States concerning the use of E-Verify.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief. Tel Bates

Authorized Agent, Partner, Owner or Officer

If business has a Human Relations Director or equivalent that person must sign as an affiant as well.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief.

B. Bates

Human Relations Director

This form is promulgated pursuant to 15CSR 60-15-.020. Use of this form is not required but the Attorney General has deemed this affidavit sufficient in form to satisfy the requirements of section 285.540, RSMo., Supp. 2008

FURTHER THE AFFIANT SAYETH NOT

Bart Bates
(Signature)

On this 25th day of January in the year 2024, before me, Bart Bates
a Notary Public in and for said State, personally appeared Bart Bates
_____, known to me to be the person who executed the within affidavit, and acknowledged to me that he/s
he executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the cou
nty and State aforesaid, the day and year first above written.

Angela C McBride
Notary Public

My Commission Expires



Request for Taxpayer Identification Number and Certification

► Go to www.irs.gov/FormW9 for instructions and the latest information.

Give Form to the
requester. Do not
send to the IRS.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
B & H Industrial Service, Inc.

2 Business name/disregarded entity name, if different from above
(same)

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☒ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ►

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ►

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

2645 N. LeCompte Road

6 City, state, and ZIP code

Springfield, MO 65803

Requester's name and address (optional)

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

____ - ____ - ____

or

Employer identification number

4 3 - 1 6 8 0 7 2 5

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign
Here

Signature of
U.S. person ►

David B. B.

Date ► **1-2-24**

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding*, later.

Springfield Location:
2645 N. LeCompte Rd
Springfield, MO 65803
417-862-6960

B & H

Industrial Service

INC.

The Lift Truck Professionals

Joplin Location:
806 Minnesota
Joplin, MO 64801
417-781-6705

To: City of Neosho
203 East Main St
Neosho, MO 64850

Date: January 24, 2024

Reference: #012424-TB5

Attn.: Nate Siler

Thank you for this opportunity to provide you with this quote for your material handling needs. We propose the following:

Clark Internal Combustion Pneumatic Tire Fork Lift

Model: GTS 25. **Unit # 3758**

Basic Capacity:

5,000 lb. @ 24" Load Center

Fuel:

LPG Fuel System

Mast: **Nested I-Beam Construction**

Three Stage Mast: 189" Maximum Lift,

85.8" Overall Height

60.3" Fork Free Lift, 3-Way Internal Hose Group

Attachments:

41" Hang-On Side Shifter

Forks:

48" x 4" x 1.75" ITA Class II Forks

Engine:

HMC Theta 2.4L Engine

146 cu in / 64 HP @ 2500 RPM

Transmission:

Single Speed Automatic Transmission

Hydraulic System:

3-Way Internal Hose Group

Controls for lift, tilt and auxiliary functions are located on the operator's right side for maximum comfort and control.

Tires:

Solid Pneumatic Tires 700x12 Drive / 600 x 9 Steer Tires

Operator Dash:

LCD and Analog Full Featured Instrument Display with Audible warnings of engine functions

Standard Equip:

Safety Full Suspension Seat with Operator Restraints and Adjustable Lumbar Support

Automatic engine shut down system

Hood Mounted Hydraulic Levers with Low Input Force

Adjustable steering column above the knee design

Hand Parking Brake

Two headlights mounted on the overhead guard

Wet Disc Brakes

Audible Back-up Alarm

High Visibility Orange Seat Belt

Additional Equipment:

Steering wheel spinner knob

Rear Grab Handle With Horn Button

Amber Strobe Light

Aluminum LP Tank





Crown Lift Trucks - Springfield
2637 E Jean Street
Springfield, MO 65803
417-862-7411
crown.com

Quotation
01/26/2024
Quote No. 648534
City of Neosho

Pricing Information

Quantity	Products	Price Each	Extended
1	C5P1050-50	\$42,265.50	\$42,265.50
Total Package Price: (Tax not included in price)			\$42,265.50

Current Lead Time: March 2024

Payment Options

CUSTOMER SHOULD INITIAL SELECTED METHOD OF PAYMENT

- ___ **Finance Options:**
60 Month Lease with a \$1.00 Buyout Purchase Option:
60 Month Lease with a \$1.00 Buyout Purchase Option \$880.48
- ___ **Finance Options:**
72 Month Lease with a \$1.00 Buyout Purchase Option:
72 Month Lease with a \$1.00 Buyout Purchase Option \$764.56
- ___ **Finance Options:**
84 Month Lease with a \$1.00 Buyout Purchase Option:
84 Month Lease with a \$1.00 Buyout Purchase Option \$693.24
- ___ **Lease Options:**
60 Month Lease with a Fair Market Value Purchase Option:
60 Monthly Lease Payments of \$688.23 *
*Above FMV Lease Rates Are Based 83 Hours Of Usage Per Month
Yearly Run Hours: 1,000 Overtime Hourly Rate: \$2.00
- ___ **Lease Options:**
72 Month Lease with a Fair Market Value Purchase Option:
72 Monthly Lease Payments of \$641.41 *
*Above FMV Lease Rates Are Based 83 Hours Of Usage Per Month
Yearly Run Hours: 1,000 Overtime Hourly Rate: \$2.00
- ___ **Lease Options:**
84 Month Lease with a Fair Market Value Purchase Option:
84 Monthly Lease Payments of \$614.02 *
*Above FMV Lease Rates Are Based 83 Hours Of Usage Per Month
Yearly Run Hours: 1,000 Overtime Hourly Rate: \$2.00
- ___ **Cash (see Total Package Price above)**

C-5 SERIES

DELIVERING **DURABILITY & COMFORT**

Crown Redefines IC with a True Industrial Truck Line. You've been settling for the limitations of gas lift trucks for years: engines intended for automobiles that run hotter than they should, brakes and cooling systems that are not up to the task and service that seems never ending.

Discover the durable and comfortable
C-5 Series LPG Pneumatic forklift:



Industrial 2.4L Engine



Designed for the toughest applications, this Crown-designed engine offers more durability with 4x fewer oil change requirements.

Crown's Power Disc Brake



The full circle pads provide up to 3x longer life and require 93% less service checks.

On-Demand Cooling®



Crown's standard On-Demand Cooling brings extra cooling and radiator clearing to the efficient dual-radiator system in high-heat and high-debris environments.

Operator Comfort



Operators benefit from an adjustable armrest that aligns the right arm to the manual hydraulic levers for comfort and productivity. Multiple seat options and a spacious operator compartment add to the all-day comfort.

Service & Support



The C-5 Series is a robust forklift backed by Crown's nationwide service and support network, including quality parts and the assured performance of the Crown Integrity Service System®.

**Enjoy more durability and comfort with the C-5 Series
Pneumatic LPG forklift.**

Contact your local Crown dealer or visit crown.com.

CROWN



Crown Lift Trucks - Springfield
2637 E Jean Street
Springfield, MO 65803
417-862-7411
crown.com

Quotation
01/26/2024
Quote No. 648534
City of Neosho

Features and Options

C5P1050-50 5,000 lb. Capacity, IC Pneumatic Tire

Mfg. Standard for Destination

Mast Type

Lift Height

Collapsed Height

Tilt Options

Steer Axle Mounting

LP Bottle Bracket Type

Overhead Guard Options

Sideshifter

Accessory Hydraulics

3rd Lever (w/ Single or Double Function Hydraulics)

Fork Carriage Width

Thrust Rollers on Carriage

Zinc Plated Corrosion Resistant Chain

Fork Type

Fork Size

Fork Length

Fork Spread

Load Backrest Size

Battery Type

Alternator

Exhaust System

Radiator Type

Counterweight Grille

Air Intake

Seat Option

Seatbelt

Steering Wheel Option

Number of Pedals

Horn

Brake System

Tread Width

Drive Tire Manufacturer

Drive Tire Options

Steer Tire Manufacturer

Steer Tire Options

Front Worklights

Travel Alarm

Tow Hitch Pin

Mud Scraper/Step Plate

Paint Color

ANSI

TI

188"/4775mm

86"/2185mm

5 Deg Back / 5 Deg Forward

Rigid Steer Axle

Fold Down Single Strap

Isomounted Operator Cell

Crown Integral Sideshifter

Single Accessory Hydraulic

Sideshift Symbol

44"/1120mm

Lower and Upper Thrust Rollers

Zinc Plated Chain and Lube

Partial Tapered Forks

1.8" x 4" / 45mm x 100mm

48"/1220mm

42"/1065mm

45" x 48"/1145mm x 1220mm(WxH)

Wet Cell - Severe Duty

12 Volt 90 Amps Fully Enclosed

LPG Catalytic Muffler

Dual Opencore Radiator

Counterweight Wedge

Single Element Mech. Indicator

FlexSeat™ Vinyl

High Visibility Orange Seatbelt

13" Steering Wheel

Separate Inching and Brake Pedal (3 Pedals)

Yes

Power Brakes

Standard Tread

Solideal Xtreme

26 x 7-12 Resilient/Super Elastic

Solideal Xtreme Solid Soft - Pneumatic

6.00-9 Resilient/Super Elastic

Overhead Guard Mounted LED

Smart (Reverse-PUF)

Tow Pin

Mud Scraper / Step Plate

Crown Beige/Gray

BID FORM

Description: (To be completed by bidding party)

Fork Lift - C5 1050-50 - IC, Pneumatic Tire, 5,000 lb. Capacity

Price(s) for unit(s) meeting enclosed specifications:

F.O.B. Neosho, MO

Projected Shipping Date: March/April 2024 - Depends upon when order is submitted.

After delivery - payment is made within 30 days of receipt of invoice

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted).

COMPANY: Crown Lift Trucks

ADDRESS: 2637 E Jean St., Springfield, MO 65803

PHONE: (417) 371-8568

EMAIL: tj.martin@crown.com

BY: T.J. Martin

AFFIDAVIT of COMPLIANCE
Section 285.530.2

State of Missouri) ss

County of Jasper)

Now this 29 day of January, 2014, the undersigned, being first duly sworn, deposes and says:

1. I am more than 18 years of age.

2. I make this affidavit from my personal knowledge of the facts stated herein or upon information and facts available to me as a duly authorized owner, partner, corporate or LLC officer or Human Relations Director of Crown Lift Trucks (name of Corporation, LLC, sole proprietorship or partnership)

3. I am authorized to make this affidavit on behalf of Crown Lift Trucks, (name of business entity, same as above)

4. I state and affirm that Crown Lift Trucks is enrolled and is (name of business entity, same as above) currently participating in E-Verify, a federal work authorization program or another equivalent electronic verification of work authorization program operated by the United States Department of Homeland Security under the Immigration Reform and Control Act of 1986.

5. Further, Crown Lift Trucks does not knowingly employ any person
(name of business entity, same as above)
who is an unauthorized alien.

6. Further, Crown Lift Trucks has performed an electronic
(name of business entity, same as above)
verification check as described above on all workers hired since January 1, 2009 or obtained documents required for completion of a federal I-9 form before it began participating in E-Verify.

7. Attached to this affidavit is a true and accurate copy of this company's Memorandum of Understanding with the United States concerning the use of E-Verify.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief. T.B. Miller

Authorized Agent, Partner, Owner or Officer

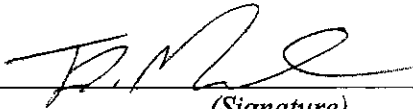
If business has a Human Relations Director or equivalent that person must sign as an affiant as well.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief.

Donald Vank - Branch Manager
Human Relations Director

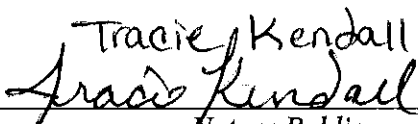
This form is promulgated pursuant to 15CSR 60-15-.020. Use of this form is not required but the Attorney General has deemed this affidavit sufficient in form to satisfy the requirements of section 285.540, RSMo., Supp. 2008

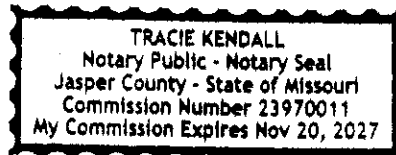
FURTHER THE AFFIANT SAYETH NOT


(Signature)

On this 30th day of January in the year 2024, before me, Tracie Kendall
____ a Notary Public in and for said State, personally appeared 
____, known to me to be the person who executed the within affidavit, and acknowledged to me that he/s
he executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the cou
nty and State aforesaid, the day and year first above written.


Notary Public



My Commission Expires

PROPOSED UNIT SALIENT CHARACTERISTICS



In Stock – 1 Unit – Subject to Availability – Serial # 223014503

2024 OCTANE FL25

MODEL 50 – 5,511 lbs. Capacity @ 24in Load Center – Sit Down Counterbalanced Forklift

PSI Mitsu 2.4L - **Tier 4 Final– EPA/CARB Compliant - LPG**

S500 Mast – 87.6"/197.0" LOWERED/RAISED (3-Stage) - Tilt Front 6 Degrees / Back 6 Degrees

Cushion Tires, Side-Shift, 3 Hydraulic Levers and Valves with Internal Hoses,

Neutral Engine Start, Hydraulic Brakes, Hydrostatic Power Steering, Anti-Slip Steps,

Steering Wheel with Spinner Knob, Rubber Floor Mats, Inching Pedal, Horn, Adjustable Steering Column,

Swing-Out LP Bracket, Dual Rear-View Mirrors, Ergonomic Cowl Mounted Levers, Assist Grip,

Adjustable Vinyl Seat with Seatbelt, LCD Multi-Function Display, Audible Back-up Alarm,

2 LED OHG Mounted Headlights, LED Amber Strobe, LED Rear Combination Lights,

Standard Load Back Rest, 48" Forks,

Complete Set of Manuals Upon Delivery | One (1) LP Tank Included |

12 month/ 2,000 hour Manufacturer Warranty |

Shipping Included FOB – 15 Days ARO

***Final Assembly USA *(NAFTA/USMCA) Compliant**

Unit Price: \$46,070.00

Extended Price: \$46,070.00

Jeff Blasdel | President

Jeff@OctaneForklifts.com

OCTANE Forklifts, Inc.

4905 Lima Street

Denver, CO 80239, U.S.A.

DUNS (011723445) – UIE (WBCPLUVBSPL9) – CAGE (88NS0) – FEIN (26-1129432) – SBE

AFFIDAVIT of COMPLIANCE
Section 285.530.2

State of ~~Missouri~~ Colorado) ss

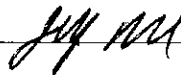
County of Denver)

Now this 25th day of January, 2024, the undersigned, being first duly sworn, deposes and says:

1. I am more than 18 years of age.
2. I make this affidavit from my personal knowledge of the facts stated herein or upon information and facts available to me as a duly authorized owner, partner, corporate or LLC officer or Human Relations Director of OCTANE Forklifts Inc. (name of Corporation, LLC, sole proprietorship or partnership)
3. I am authorized to make this affidavit on behalf of OCTANE Forklifts Inc. (name of business entity, same as above)
4. I state and affirm that OCTANE Forklifts Inc. is enrolled and is (name of business entity, same as above) currently participating in E-Verify, a federal work authorization program or another equivalent electronic verification of work authorization program operated by the United States Department of Homeland Security under the Immigration Reform and Control Act of 1986.
5. Further, OCTANE Forklifts Inc. does not knowingly employ any person
(name of business entity, same as above)
who is an unauthorized alien.
6. Further, OCTANE Forklifts Inc. has performed an electronic
(name of business entity, same as above)
verification check as described above on all workers hired since January 1, 2009 or obtained documents required for completion of a federal I-9 form before it began participating in E-Verify.
7. Attached to this affidavit is a true and accurate copy of this company's Memorandum of Understanding with the United States concerning the use of E-Verify.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief. Jeff Blasdel

Authorized Agent, Partner, Owner or Officer

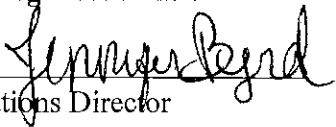


If business has a Human Relations Director or equivalent that person must sign as an affiant as well.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief.

Jennifer Byrd

Human Relations Director



This form is promulgated pursuant to 15CSR 60-15-.020. Use of this form is not required but the Attorney General has deemed this affidavit sufficient in form to satisfy the requirements of section 285.540, RSMo., Supp. 2008

FURTHER THE AFFIANT SAYETH NOT

Ⓢ Jeff M
(Signature)

On this 25th day of JANUARY in the year 2024, before me, JONATHAN DAVISON CURTS a Notary Public in and for said State, personally appeared Jeff Blasdel, known to me to be the person who executed the within affidavit, and acknowledged to me that he/s he executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the county and State aforesaid, the day and year first above written.

Jonathan Davison Curts
Notary Public

JONATHAN DAVISON CURTS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20044024237
MY COMMISSION EXPIRES AUGUST 25, 2024

My Commission Expires



1	SEAT	Full Suspension Vinyl Seat
1	ACCESSORIES	Orange Seat Belt
1	ACCESSORIES	Rubber Floor Mat
1	ACCESSORIES	Operator Convenience Tray With Clipboard Holder
1	LP TANK	Aluminum LP Tank, Horizontal Fill - 33.5#

SUMMARY FOR CATERPILLAR MODEL: GP25N6

UNITS:	1
PRICE PER UNIT:	\$36,249
TOTAL:	\$36,249

FREIGHT: DELIVERED

PROPOSAL SUMMARY

EQUIPMENT DESCRIPTION	UNITS	PER UNIT	TOTAL
Caterpillar GP25N6 - 5,000 lb. Capacity LP Pneumatic Tire Lift Truck	1	\$36,249	\$36,249
TOTAL INVESTMENT:	1		\$36,249

BY SIGNING THIS PROPOSAL ("ORDER"), UNDERSIGNED AGREES TO PAY FOR AND AUTHORIZES WIESE TO PROCEED WITH THE SALE OF PRODUCTS AND SERVICES DESCRIBED IN THIS PROPOSAL, IN ACCORDANCE WITH THE ATTACHED TERMS AND CONDITIONS

Order Approved and Accepted by:
City of Neosho Recycling Center
AUTHORIZED SIGNER

AUTHORIZED SIGNATURE

TITLE

PRINTED NAME

DATE ACCEPTED

PURCHASE ORDER NUMBER

WIESE TERMS AND CONDITIONS

PROPOSAL VALIDITY PERIOD: Unless otherwise indicated on the proposal, written proposals by Wiese USA, Inc. shall expire automatically seven (7) days after the date appearing on the proposal unless Wiese USA, Inc. receives and accepts Customer's order within that period.

STANDARD TERMS: Net 0 days, subject to credit approval. Lease rates are subject to credit approval/documentation. Freight, surcharges, and applicable taxes may apply. Wiese Terms and Conditions are subject to change.

CANCELLATION OR CHANGES: Customer agrees to pay costs and expenses, up to 100% of the order value, incurred as a result of any cancellation or change.

WARRANTY: To the extent permitted, Wiese will pass to Customer any applicable manufacturer's warranty of the Products, and makes no other warranties express or implied. Used Equipment is sold "as is" unless noted otherwise in this proposal.

MISCELLANEOUS: Customer represents that it shall possess and will maintain all applicable and required permits, licenses, approvals, registrations, consents and certificates.

ENTIRE AGREEMENT: This Order constitutes the entire agreement between the parties. Any modification must be made in writing and approved by both parties. Any service work to be performed by Wiese is subject to separate terms and conditions.

AFFIDAVIT of COMPLIANCE
Section 285.530.2

State of Missouri) ss

County of NEWTON)

Now this 29TH day of JANUARY, 2024, the undersigned, being first duly sworn, deposes and says:

1. I am more than 18 years of age.
2. I make this affidavit from my personal knowledge of the facts stated herein or upon information and facts available to me as a duly authorized owner, partner, corporate or LLC officer or Human Relations Director of WIESE USA (name of Corporation, LLC, sole proprietorship or partnership)
3. I am authorized to make this affidavit on behalf of WIESE USA. (name of business entity, same as above)
4. I state and affirm that WIESE USA is enrolled and is (name of business entity, same as above) currently participating in E-Verify, a federal work authorization program or another equivalent electronic verification of work authorization program operated by the United States Department of Homeland Security under the Immigration Reform and Control Act of 1986.
5. Further, WIESE USA does not knowingly employ any person
(name of business entity, same as above)
who is an unauthorized alien.
6. Further, WIESE USA has performed an electronic
(name of business entity, same as above)
verification check as described above on all workers hired since January 1, 2009 or obtained documents required for completion of a federal I-9 form before it began participating in E-Verify.
7. Attached to this affidavit is a true and accurate copy of this company's Memorandum of Understanding with the United States concerning the use of E-Verify.

BID FORM

Description: (To be completed by bidding party)

GP 25 INTERPILAR LIFT TRUCK

5,000 lb. CAPACITY

SIDE SHIFT, 188" MAST, 48" FORKS

SOLID PNEUMATIC TIRES, 33.5 ALUMINUM PROPANE TANK

Price(s) for unit(s) meeting enclosed specifications: \$ 36,249.00

F.O.B. Neosho, MO

Projected Shipping Date: NOVEMBER 15, 2024

After delivery - payment is made [within 30 days of receipt of invoice](#)

I certify that this bid on stated piece(s) of equipment meets or exceeds the bid specifications (unless otherwise noted).

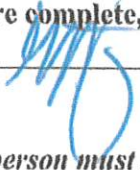
COMPANY: WIESE USA

ADDRESS: 7487 S. 7TH ST. DVENWIG, MO. 64841

PHONE: (417) 624-0091

EMAIL: TCHANDLER@WIESEUSA.COM

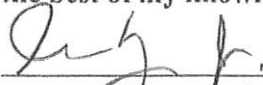
BY: TOM CHANDLER

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief. GREG TORON 

Authorized Agent, Partner, Owner or Officer

If business has a Human Relations Director or equivalent that person must sign as an affiant as well.

I certify under penalty of perjury that the statements above are complete, true and accurate to the best of my knowledge and belief.


Human Relations Director

This form is promulgated pursuant to 15CSR 60-15-.020. Use of this form is not required but the Attorney General has deemed this affidavit sufficient in form to satisfy the requirements of section 285.540, RSMo., Supp. 2008

FURTHER THE AFFIANT SAYETH NOT


(Signature)

On this 29th day of January in the year 2024, before me, TERRY L LEATH
a Notary Public in and for said State, personally appeared Greg Topjian + TJ Zygmunt
, known to me to be the person who executed the within affidavit, and acknowledged to me that he/s
he executed the same for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the cou
nty and State aforesaid, the day and year first above written.


Notary Public

My Commission Expires June 15, 2024



REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No. 2024-05: Contract with Jimmy Smith Landscaping for Cemetery Grounds Maintenance

ORIGINATING DEPARTMENT: City Clerk

ATTACHMENT:

1. Bill No. 2024-05 Jimmy's Landscaping RE IOOF cemetery lawn and landscaping services 2024
 2. CON - Jimmy Smith Landscaping K RE IOOF cemetery lawn and landscaping services 2024
-

PURPOSE:

To seek council's approval of the contract between the city and Jimmy Smith Landscaping for the IOOF Cemetery grounds maintenance.

BACKGROUND:

During the January 16th council meeting, council approved the bid from Jimmy Smith's Landscaping for maintaining the grounds and the Neosho IOOF Cemetery. The contract is in the amount of \$108,000. This will include monthly mowing, as well as mulching of leaves and picking up of fallen limbs, as discussed with Mr. Smith.

RECOMMENDATION:

Staff recommends approval of the contract with Jimmy Smith Landscaping under Bill No. 2024-05.

COUNCIL BILL NO. 2024-05

ORDINANCE NO. 484-2024

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Agreement with Jimmy Smith d/b/a Jimmy Smith Landscaping, for the purpose of providing lawn and landscaping services at the Neosho IOOF Cemetery for the not to exceed price of One Hundred Eight Thousand and 00/100 Dollars (\$108,000.00); and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Agreement by and between the City of Neosho, Missouri, and Jimmy Smith d/b/a Jimmy Smith Landscaping for the purpose of providing lawn and landscaping services at the Neosho IOOF Cemetery for the not to exceed price of One Hundred Eight Thousand and 00/100 Dollars (\$108,000.00), a true and accurate copy of said agreement being attached hereto and incorporated as Exhibit “A,” be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho, Missouri, is hereby authorized and directed to execute said Agreement by and on behalf of the City of Neosho.

Section 3. That this Ordinance shall be in full force and effect from and after its passage.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

INDEPENDENT CONTRACTOR AGREEMENT

This AGREEMENT is entered into this _____ day of February 2024 (“the Effective Date”), by and between the City of Neosho, Missouri (hereinafter “City”), and Jimmy Smith, d/b/a Jimmy Smith Landscaping (hereinafter “Contractor”), and with City and Contractor being referred to collectively as “the Parties.”

WHEREAS, City desires to engage an independent contractor for the purpose of providing lawn and landscaping services at the Neosho IOOF Cemetery, as described in City’s Request for Proposal, attached hereto and incorporated by reference as Exhibit A; and

WHEREAS, Contractor desires to be engaged as an independent contractor for the purpose of providing lawn and landscaping services at the Neosho IOOF Cemetery, as described in Contractor’s Response to City’s Request for Proposal, attached hereto and incorporated by reference as Exhibit B; and

WHEREAS, Contractor has become the lowest and best Offeror for performing said services.

NOW, THEREFORE, in exchange for valuable consideration each received from the other, the receipt and sufficiency of which is hereby acknowledged, the Parties do hereby agree as follows:

1. Term. The term of this Agreement is October 1, 2023 to September 30, 2026, unless terminated as provided herein.

2. Contractor’s Services. Contractor agrees to diligently perform in a professional and workmanlike manner the scope of services specified in City’s Request for Proposal, attached hereto and incorporated by reference as Exhibit A and Contractor’s Response to City’s Request for Proposal, attached hereto and incorporated by reference as Exhibit B. Contractor agrees to provide lawn and landscaping services at the Neosho IOOF Cemetery. Contractor agrees to diligently perform in a professional and workmanlike manner the following services:

a. Lawn and landscaping services, including mowing, pruning, and trimming all vegetation, including grass, shrubs, and trees. Contractor shall remove all clippings from headstones, markers, sidewalks, and driveways. Contractor shall remove all leaves, limbs, brush, and trash. Contractor is not required to maintain the area of the IOOF Cemetery maintained by the Sons of the Confederacy. Contractor shall perform the foregoing services on a weekly basis.

b. If City gives Contractor notice of a burial, Contractor shall provide the foregoing lawn and landscaping services in the area of the burial site so as to make the site appear presentable at the time of burial. Contractor shall not perform any work during a burial.

c. Contractor shall exercise reasonable care so as not to damage any headstones or markers. If Contractor damages a headstone or marker, he shall immediately notify City.

d. City and Contractor may agree to additional services as herein provided.

3. Costs and Payment. City shall pay Contractor as set forth herein, which shall constitute full and complete compensation for Contractor's work. City shall pay Contractor One Hundred Eight Thousand and 00/100 Dollars (\$108,000.00) – full amount of contract – as follows. Contractor shall be paid in monthly installments of Nine Thousand and 00/100 Dollars (\$9,000.00). In no event shall City be liable for overtime pay. Contractor shall provide all labor, materials, and equipment.

4. Independent Contractor. This Agreement does not create an employer-employee relationship between the parties. Contractor is an independent contractor and is not entitled to any benefits including health, dental, vision, disability, life, and unemployment insurance, worker's compensation coverage, and LAGERS. Contractor is an independent contractor and not an employee for all purposes including the application of the Fair Labor Standards Act Minimum Wage and Overtime Payments, Federal Insurance Contribution Act, Social Security Act, Federal Unemployment Tax Act, and the provisions of the Internal Revenue Code, Missouri Revenue and Taxation Laws, and Missouri's Worker Compensation Laws and Unemployment Insurance Laws.

5. Amendments. The covenants and obligations herein contained are the full and complete terms of this Agreement, and no alteration, amendments, or changes to such terms shall be binding unless first reduced to writing and executed with the same formality as this Agreement.

6. Assignment. This Agreement, including payment hereunder, shall not be sub-let, assigned, or otherwise disposed of, except with the prior written consent of the City.

7. Attorney's Fees and Expenses. If City files suit in order to enforce any term of this Agreement and is the prevailing party, Contractor shall be liable for City's reasonable attorney's fees and expenses. In no event shall City be liable for Contractor's reasonable attorney's fees and expenses.

8. Choice of Law and Venue. This Agreement has been made, and its validity, performance and effect shall be determined, in accordance with the laws of the State of Missouri and venue for litigation between the parties shall be solely and exclusively in Newton County, Missouri.

9. Compliance with Laws. Contractor shall observe and comply with all Federal, State, and local laws and ordinances that affect those employed or engaged by it on the project, or the material or equipment used, or the conduct of the work, and shall procure all necessary licenses, permits, and insurance.

10. Consequential Damages. In no event shall City be liable to Contractor for special, indirect, or consequential damages.

11. Contract Documents. The contract documents shall consist of the following: this Agreement, City's Request for Proposal, and Contractor's Response to City's Request for Proposal. In the event of conflict between the contract documents, this Agreement will prevail. In

the event of conflict between City's Request for Proposal and Contractor's Response to City's Request for Proposal, City's Request for Proposal will prevail.

12. Entire Agreement. This Agreement (including any Exhibits) contains the entire understanding of the parties with respect to the subject matter hereof. It may not be altered or amended except by an agreement in writing signed by both parties.

13. Headings. The headings of paragraphs in this Agreement are for convenience only. The headings form no part of this Agreement and shall not affect its interpretation.

14. Indemnification. To the fullest extent permitted by law, Contractor agrees to defend with counsel selected by City, and indemnify and hold harmless City, its officers, engineers, representatives, agents, and employees from and against any and all liabilities, damages, losses, claims, or suits, including costs and attorneys' fees, for or on account of any kind of injury to person, bodily or otherwise, or death, or damage to or destruction of property, or any other circumstances, sustained by City or others, arising from breach or enforcement of this Agreement or out of services and operations negligently performed hereunder by Contractor, or claims relating thereto, and including but not limited to City's reliance on or use of the services or products provided by Contractor under the terms of this agreement. Contractor shall not be liable for any loss or damage attributable solely to the negligence of City.

15. Insurance. Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Agreement, insurance of such types and in such amounts as may be necessary to protect it and the interests of City against all hazards or risks of loss as hereunder specified or which may arise out of the performance of this Agreement. Such policies shall name City as an additional insured, with limits of liability not less than the sovereign immunity limits for Missouri public entities calculated by the Missouri Department of Insurance as of January 1 each calendar year and published annually in the Missouri Register pursuant to Section 537.610, RSMo. (See, <http://insurance.mo.gov/industry/sovimunity.php>)

16. Notices. All notices required or permitted hereinunder and required to be in writing may be given by first class mail addressed to City and Contractor at the addresses as follows:

City of Neosho, Missouri
ATTN: David Kennedy
203 E. Main St.
Neosho, MO 64850

Jimmy Smith Landscaping
ATTN: Jimmy Smith
[REDACTED]
Neosho, MO 64850

The date of delivery of any notice given by mail shall be the date falling on the second full day after the day of its mailing.

17. Payment for Labor and Materials. Contractor agrees and binds itself to pay for all labor done, and for all the materials used in the construction of the work to be completed pursuant to this contract.

18. Representations. The signatories hereto represent and warrant that they have read

this Agreement, that they are fully authorized in the capacities shown, that they understand the terms of this Agreement, and that they are executing the same voluntarily and solely for the consideration described herein.

19. Severability. If any of the provisions of this Agreement shall be construed to be invalid or illegal, the legality or validity of the other provisions of this Agreement shall not be effected thereby. Any illegal or invalid provision of this Agreement shall be severable and any other provisions shall remain in full force and effect.

20. Termination. City reserves the right to terminate this contract by giving at least five (5) days prior written notice to Contractor, without prejudice to any other rights or remedies of City, should Contractor be adjudged bankrupt, or if Contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed for Contractor or for any of its property, or if Contractor should persistently or repeatedly fail or refuse to supply enough properly skilled workmen or proper material, or if Contractor should fail or refuse to make prompt payment to any person supplying labor or materials for the work under the contract, or persistently disregard instructions of City or fail to observe or perform any provisions of the contract. City may terminate this Agreement, without cause, by giving Contractor thirty (30) days' written notice of the same.

21. Third-Party Beneficiaries. This Agreement shall not confer any rights or remedies upon any person other than the parties and their respective successors and permitted assigns.

22. Waiver. Waiver of any provision of this Agreement or breach of this Agreement shall not thereafter be deemed to be a consent by the waiving party to any further waiver, modification or breach by the other party, whether new or continuing, of the same or any other covenant, condition or provision of this Agreement. Failure by one of the parties to this Agreement to assert its rights for any breach of this Agreement shall not be deemed a waiver of such rights.

IN WITNESS WHEREOF, the Parties have hereunto set their hands the date first above written.

CITY OF NEOSHO, MISSOURI

Richard Davidson, Mayor

Jimmy Smith,
d/b/a Jimmy Smith Landscaping

ATTEST:

Cheyenne Wright, City Clerk

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No. 2024-06: Contract with Maxim Golf for the Managing Services of the Neosho Golf Course

ORIGINATING DEPARTMENT: City Manager

ATTACHMENT:

1. Bill No. 2024-06 agreement w Maxim Golf mang of Golf Course
 2. Maxim Contract for Services - 2024-Redline Accepted Draft
-

PURPOSE:

To approve the contract with Maxim Golf for management of the Neosho Golf Course.

BACKGROUND:

The City of Neosho sought bids for a management company to operate a municipal-owned golf course. The city received 3 bids and council approved the bid for Maxim Golf. This contract details the cooperative agreement between the two entities.

RECOMMENDATION:

To approve the contract as submitted and authorize the Mayor to execute it.

AN ORDINANCE authorizing the City of Neosho to enter into an Agreement with Maxim Golf, LLC, a Missouri Limited Liability Company, for the purpose of providing management and promotional services of the Neosho Golf Course with payment of said services based on revenues generated; and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Agreement by and between the City of Neosho and Maxim Golf, LLC, a Missouri Limited Liability Company, for the purpose of providing management and promotional services of the Neosho Golf Course with payment of said services based on revenues generated, a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit “A,” be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho is hereby authorized and directed to execute said Agreement by and on behalf of the City of Neosho, Missouri.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

PERSONAL SERVICES AGREEMENT

For the Management of

Neosho Golf Course

This PERSONAL SERVICES AGREEMENT (the "Agreement") is made and entered into as of this 1st day of March, 2024 by and between the City of Neosho, MO ("Owner"), and Maxim Golf, LLC, a Missouri limited liability company, ("Maxim").

Recitals

A. Owner desires to promote and provide for the management of Neosho Golf Course, including, but not limited to, golf course, clubhouse, pro shop, maintenance building, driving range, grounds, and appurtenances (singularly referred to as "Facility" or collectively referred to as "Facilities").

B. Maxim is a professional golf course, bowling, entertainment, and recreation management company whose principals have experience and expertise related to golf course, and recreation management and promotion.

C. Owner desires to retain Maxim to manage and operate the Facilities on behalf of Owner pursuant to the terms and conditions of this Agreement.

Agreement

The parties agree as follows:

1. TERM OF AGREEMENT. The standard term of this Agreement shall begin 12:00 a.m. on March 1st, 2024 (the "Start Date") and end at 11:59 p.m. on February 28th, 2029, subject to the termination provisions stated herein. If, on or before the expiration of the original term of this Agreement, the parties shall agree to mutually acceptable terms for a new Schedule of Fixed and Contingent Management Fees, then this Agreement shall be extended for an additional (one) year, and all terms and conditions of this Agreement between Owner and Maxim, other than the terms and conditions set forth in paragraph 7.c. or otherwise agreed upon shall remain as set forth herein. In no event shall the term of this Agreement exceed six (6) years. This Agreement is specifically conditioned upon an annual appropriation by Owner and in the event that the Owner shall, in its sole and exclusive discretion, determine not to make an annual appropriation of funds necessary for this Agreement, then this Agreement shall terminate and be null and void as of the last day of the year for which the golf course operation was funded. In the event Owner fails to approve appropriation of funds provided for in this Agreement for any year, Owner will pay Maxim the applicable Monthly Management Fee for three months thereafter, provided that such three-month period remains within the term of this Agreement. In the event that the Owner shall enter into a written contract with another to sell the Facilities or the real estate upon which the Facilities are located, then Owners shall give Maxim notice of the same and the intended date of Closing within 7 calendar days of its complete execution and this Agreement shall terminate upon the Closing of the Sale of the Golf Facility or the property upon which the golf course is located. In this event there shall be no payment of termination or cancellation fees, only liability for fees earned for services performed prior to termination. In the event that a determination is made by the Owner to discontinue its ownership of the Golf Facility, Owner agrees that it will consider sale of the Facilities to Maxim among its options. The preceding sentence shall not

be construed so as to create a right of first refusal or an option to purchase on behalf of Maxim. Maxim can make a reasonable proposal for the purchase of the Facility at any time for consideration by the City of Neosho.

2. SERVICES TO BE PERFORMED BY MAXIM. During the term of this Agreement, Maxim shall operate the Facilities, which shall include, but not be limited to, the collection and disbursement of all monies, the employment of all employees, the promotion and management of the golf course, the purchase and sale of food, beverages, merchandise, supplies and services, the purchase and maintenance of insurance coverage for its operations and equipment, the handling of disputes with third parties, the collection and payment of all appropriate taxes, the securing of all appropriate licenses, permits and approvals and the performance of all other day-to-day activities relative to the Facilities. Maxim shall have an agent present at Neosho Golf Board Meetings. Maxim shall set all fees for golf use by members and customers with the exception of the fee structure as specified in Exhibit "A" of this Agreement and incorporated herein. With respect to the operation of the Facilities, the parties hereto agree as follows:

a. Owner Authorization. Owner hereby grants and delegates to Maxim the authority and the responsibility necessary to permit Maxim to perform its duties under this Agreement and agrees to take such additional steps as are necessary to evidence such delegation and authorization as are reasonably requested by Maxim. Owner hereby grants to Maxim the exclusive right to manage the Facilities according to the terms of this Agreement for the term of this Agreement.

b. Major Decisions. From time to time, Maxim shall submit to Owner or Owner's representative(s) for approval, proposals for major activities, improvements or events, including, but not limited to, capital improvements and expenditures and the Proposed Annual Budgets (as defined in subparagraph 2(d) below). Maxim shall secure Owner's prior approval of all such major proposals. Major Proposals shall be those in which the anticipated cost is in excess of \$5,000 and approved through the annual budget process. Any non-budgeted expenditure will require Owner's prior approval. Maxim shall, to the best of its ability, operate the Facilities in accordance with the major policy decisions approved by Owner.

c. Operational Guidelines. Maxim shall develop a set of written guidelines ("Operational Guidelines") for the Facilities. The Operational Guidelines shall include information necessary for the operation of the Facilities, including, but not limited to, operation and maintenance of the golf course, the maintenance facility, the clubhouse, the pro shops and other operations of the Facilities, the hours of operation and other policies relating to the operation of the Facilities. Upon development of the Operational Guidelines, same shall be submitted to Owner for approval and shall become effective only upon approval by Owner, which approval shall not be unreasonably withheld or delayed.

d. Annual Budgets. Not later than August 1st of each year during the term of this Agreement, Maxim shall submit a proposed operating budget (the "Proposed Annual Budget") to Owner for the upcoming fiscal year. The Proposed Annual Budget shall specify the amount of working capital required to continue operations of the Facility for the upcoming fiscal year in light of all major policy decisions, specify all anticipated expenses required to maintain a reasonable level of equipment, supplies and inventory and all projected expenses for long term capital improvements and equipment. Owner shall approve or reject the Proposed Annual Budget by September 30th, annually. Owner shall specify, in writing, the basis for any rejected item in the Proposed Annual Budget. The Proposed Annual Budget, once approved by Owner, shall be referred to as the "Annual Budget". In the event that the Owner and

Maxim are unable to reach agreement regarding the Annual Budget, then either party may notify the other of their intent to terminate and this Agreement shall terminate on the last day of the term for which there was a budget approved by Owner.

e. Promotion of Facilities. Maxim shall coordinate with and direct to Owner all work done in the promotion, advertisement and public relations with respect to the Facilities. Maxim shall coordinate the creation or modification of graphics, logos and other visual materials for letterheads, envelopes, temporary and permanent signs, brochures, information profiles, progress reports, press releases, digital media, website, and bulletins. Maxim will use reasonable efforts (as limited by Annual Budgets) to assure that the Facilities will be favorably presented in print and all other forms of communications media. All costs for the promotion of the facility shall be the responsibility of the property including contracted marketing services and corporate staff time assigned for marketing design and creation specific to the facility. The personnel cost for the marketing of the facility whether contracted through an outside marketing firm or corporate staff shall not exceed \$8,000 per year fiscal year without the written consent of the Owner. All materials or items developed pursuant to this paragraph shall be the exclusive property of Owner and shall be shown to the agent designated by Owner prior to dissemination.

f. Facility Personnel. Maxim shall hire Facility staff, including all on-site and off-site management personnel, golf professional staff, assistant golf professional staff, golf course superintendents, food and beverage staff, house and grounds maintenance personnel, janitorial staff, and others deemed by Maxim to be appropriate for the efficient operation of the Facilities and to the extent authorized by the Budget for the Facilities as approved by Owner; provided, however, that Owner shall have the right to approve the selection or removal of the golf course head professional, general manager, and golf course superintendent, such approval not to be unreasonably withheld or delayed. All Facilities personnel shall be hired by and be employees of, Maxim. Maxim will not prevent any of the personnel employed at the Facilities from going to work for Owner or another management company in the event this Agreement expires or is terminated. At termination, Owner and Maxim shall have the right to offer employment to any employee of the Facilities. During the term of this Agreement, Maxim shall not remove or relocate the General Manager, and/or the golf course superintendent of the Golf Facility to another Facility managed by Maxim without obtaining prior Owner consent, which will not be unreasonably withheld or delayed.

g. Corporate Personnel Visitation and Inordinate Time Requirements. To the extent it is necessary for Maxim Golf extended service personnel, or corporate personnel to assist in the daily management of the facility, Maxim Golf shall be reimbursed up to \$500.00 per month for the reimbursement of such additional management needs. Maxim Golf shall bill these charges on an hourly rate of \$50.00 per hour plus travel expenses associated therewith for personnel with a maximum expense not to exceed \$500.00 per month for any given month. Maxim Golf shall have the right to bill the property directly for such expenses and all such expenses shall be reported in the monthly profit and loss statements as an operational expense of the property.

h. Food, Beverage and Merchandise. To the extent permitted by law, Owner shall permit the sale of food, beer, wine and liquor at the Facilities. Maxim shall apply for and obtain required State of Missouri and City of Neosho liquor licenses, and all other required permits and approvals. Owner shall cooperate with Maxim in obtaining such licenses, permits and approvals. Maxim shall comply with all laws relating to the sale of alcoholic beverages. In addition, Maxim shall purchase and sell such other food, beverage and merchandise at the Facilities for such prices as Maxim deems prudent.

3. REVENUES, EXPENSES, APPROVED CAPITAL EXPENDITURES & APPROVED RESERVES.

a. Revenues. "Revenues" shall mean all cash receipts of any kind from operation of the Golf Facility, including, but not limited to, membership fees, green fees, cart rentals, range fees, proceeds from the sale of food, beverage and merchandise, rebates, rentals, interest income, Advances (as hereafter defined) and insurance proceeds. Revenues shall not include fees collected for golf lessons if the fees are paid directly to the professional providing such lessons. Owner also has the right to conduct lessons, schools and other activities on the Facilities and any fees paid by Owner to Maxim to conduct such lessons, schools, or other activities under an agreement with Maxim shall be included as "Revenues". Utility reimbursements, tax collections (non-sales tax), or gifts and contributions made to the facilities shall not be included in the calculation of "Revenues".

b. Expenses. "Expenses" shall mean all necessary, reasonable and ordinary cash expenditures authorized by the Annual Budget established by Owner and Maxim and incurred in connection with the Facilities, including, but not limited to:

- i. Payroll, payroll taxes, employee benefits (including, without limitation, insurance, health and welfare benefits) and unemployment insurance and taxes, and sales, rental and other taxes and governmental fees and charges assessed against the Facilities or their operations;
- ii. Payments for food, beverage, merchandise and supplies;
- iii. Insurance costs for the insurance coverage specified in paragraph 13 hereof and approved in the Annual Budget for the Facilities;
- iv. Payments for advertising and promotion of the Facilities;
- v. Acquisition costs, lease payments and debt service payments for the Facilities, equipment, furniture, fixtures and other capital items as included in the Annual Budget;
- vi. License fees, dues and subscriptions;
- vii. Expenses of hiring and training personnel, except expenses of training Maxim management personnel;
- viii. Costs of maintaining and improving the golf course, pro shop, and other assets of the facilities;
- ix. Fees of outside consultants and third-party contractors retained by Maxim in connection with the operation of the Facilities, such as accountants, attorneys, tax advisers, and marketing public relations consultants, if approved in advance by Owner or Owner's representative;

- x. All Management Fees (as defined in paragraph 7, below) paid to Maxim in accordance with this Agreement, including the Fixed Management Fee. Owner may choose to not include this expense in the operating budget and the operating budget shall be amended accordingly.
- xi. Expenses associated with an annual audit of the Facilities by an Owner designated auditor; and
- xii. Expenses not specifically authorized by the Annual Budget that are approved in advance by the Owner or the Owner's representative.

c. Approved Capital Expenditures. "Approved Capital Expenditures" shall mean all cash payments for equipment, furniture, fixtures, Facility improvements or other capital items approved by Owner, which approval may be included in an Annual Budget or other separate form of approval.

d. Approved Reserves. "Approved Reserves" shall mean the amount of cash approved by Owner to be held by Maxim for future operation of the Facilities.

4. ADVANCES FROM OWNER. If at any time the Net Cash Flow from the operation of the Facilities is not sufficient to meet the Approved Capital Expenditures or Expenses as they become due, Owner shall advance, unless such advance is prohibited by law, to Maxim the amount of cash necessary to meet such obligations (such amount being referred to as an "Advance").

5. ACCOUNTS. All Revenues, Advances and Approved Reserves shall be held by Maxim for Owner, in an account in the name of the owner designating Maxim as an authorized agent on the account, such and sufficient to protect Owner's interest in such funds, subject to such funds being disbursed for Expenses and Approved Capital Expenditures. Maxim shall maintain one or more separate accounts so designated (collectively referred to as "Facility Accounts"), which shall, whenever possible, include interest bearing accounts, pursuant to Missouri Revised Statute Section 95.280 and as required under Owner's code, each approved in advance by Owner, for the receipt of Revenues, Advances and Approved Reserves and for the payment of Approved Capital Expenditures Expenses and Approved Reserves. Maxim agrees that Owner shall have one or two designated signers and/or at a minimum one or two designated viewers on such accounts (who will provide Maxim reasonable notice of and account for any transactions conducted by them with respect to the accounts) and that Owner may have access to such accounts via the internet or other methods so that Owner may, without notice, review transaction activity on the accounts. Any check or other order to pay, written for more than \$10,000 (Ten Thousand Dollars) will require a third signature or written approval by one of the Owner's designated signers or other authorized Owner's personnel. Maxim shall account to Owner and pay all payments due to Owner from Facility Accounts in accordance with this Agreement. Maxim shall not commingle Revenues, Advances and Approved Reserves with other money or accounts, and shall not take any money or property from the Facility Accounts or from the Facilities, except to make payments for Approved Capital Expenditures and Expenses as set forth in this Agreement. Maxim shall not purchase goods or services from an entity affiliated with Maxim unless such purchase is on terms reasonably competitive with terms available from non-affiliated sources. Maxim shall comply with requirements, if any, which may become applicable to it regarding purchase of equipment, materials and services.

6. EMPLOYEES. All employees of the Facilities shall be employees of Maxim.

7. MANAGEMENT FEES. In exchange for services rendered by Maxim under this Agreement, Maxim shall be (1) reimbursed from Facility Accounts for all direct and indirect out-of-pocket expenses authorized by this Agreement in connection with the operation of the Facilities, (2) paid from Facility Accounts a Fixed Management Fee as described in subparagraph 7.a. hereinafter, and (3) subject to the terms and conditions of subparagraph 7.b. below, paid from Facility Accounts a Contingent Management Fee. If on any date when any of the foregoing amounts is owing to Maxim the Facility Accounts contain insufficient funds to pay Maxim the amounts owing, Owner, unless prohibited by law, shall immediately make a disbursement to Maxim to cover the shortfall.

a. Fixed Management Fee. A "Fixed Management Fee" shall be paid to Maxim for each month this Agreement is in effect in the applicable amount described in subparagraph 7.c. (Schedule of Fixed and Contingent Management Fees). For any partial month, the Fixed Management Fee shall be prorated. The Fixed Management Fee shall be due and payable on the first day of each month.

b. Contingent Management Fee. A "Contingent Management Fee" shall accrue and be payable to Maxim at the end of the first (1st) month following a fiscal year in which Revenues equals or exceeds Revenues Base set forth in subparagraph 7.c. (Schedule of Fixed and Contingent Management Fees), provided, however, that no such Fee shall be due and owing unless and until the Owner has received the audited financial statements referenced in paragraph 8 hereof and as hereinafter provided. Within thirty (30) days of receipt of the unaudited annual financial statements for the Facilities that are in form and substance satisfactory to the Owner, said Owner will make a provisional payment of the Contingent Management Fee equal to seventy-five percent (75%) of the Contingent Management Fee as calculated based upon the unaudited financial statements. Upon receipt of the audited financial statements for the Facilities, the Contingent Management Fee will be recalculated based upon the audited financial statements, and the balance paid or refunded as the case may be. If the Owner does not exercise its option to conduct an audit of the Facilities annual financial statements, then the balance of the Contingent Management Fee shall be paid on or before July 1 of the following fiscal year. The amount of the Contingent Management Fee shall be determined by multiplying the Contingent Management Fee Percent set forth in subparagraph 7.c. by the amount by which Revenues for such year exceeds the Revenues Base for the applicable year as set for the in subparagraph 7.c. For purposes of determining the Contingent Management Fee, "Revenues" shall mean the total sum of all Revenues generated by the operation of the Golf Facility as specifically defined by Section 3(a). However, Revenue for purposes of this paragraph shall not include interest, proceeds from the sale of major assets, insurance proceeds, owner subsidies or advances and draws on letters of credit or other revenues not attributable to the operation of the Facilities such as taxes collected (non-sales tax), gifts, donations, and contributions.

Schedule of Fixed and Contingent Management Fees.

Fiscal Year	Fixed Monthly Fee	Contingent Management Fee Percentage	Revenues Base
2024	\$3,667	10%	\$630,000
2025	\$3,750	11%	\$635,000
2026	\$3,833	12%	\$640,000
2027	\$3,917	13%	\$645,000
2028	\$4,000	14%	\$650,000

*If Revenues for Owner equals \$640,000 in fiscal year 2024 then the Contingent Management Fee would be computed as follows: (Example Revenue Base) = \$630,000 (\$10,000 times 10% or a contingent management fee of \$1,000).

If this Agreement is terminated prior to the end of any fiscal year, for purposes of determining the Contingent Management Fee the dollar amount of Revenue Base for that year set forth above shall be adjusted downward, based upon reasonable proration, as determined by utilizing the monthly average of the preceding two fiscal years. If Revenues for any calendar year are less than Adjusted Revenues Base, Owner may, in Owner's sole discretion, consent to the payment of all or any portion of the Contingent Management Fee for that period.

c. Transition Fee. Owner agrees to pay Maxim Golf a pro-rated amount of the Fixed Management Fee of \$3,667 for the month of February, 2024, if Owner requests early commencement of the term of this Agreement, as compensation for the transition to Maxim Golfs management. This fee shall be pro-rated on an equally divided amount of the days of service for the Month of February.

8. ACCOUNTING. Maxim shall maintain books and records relating to the business activities of the Facilities separate from its other books and records. Maxim shall prepare an opening balance sheet listing assets and liabilities used or incurred in the operation of the Facilities. Thereafter, Maxim shall have monthly financial statements prepared which shall include unaudited balance sheets and income statements (each month's records shall be referred to separately as the "Monthly Financial Statements") prepared as if the operation of the Facilities is a business entity separate from Maxim and Owner. Maxim shall deliver to owner a copy to of each month's Monthly Financial Statements by the twentieth day of the following month except where circumstances beyond the reasonable control of Maxim delay delivery of such statements. Owner agrees that if the deadline set forth in the preceding sentence is impractical or impossible for Maxim to meet, Owner shall modify such requirements. In addition, Maxim shall deliver to Owner, not later than November 1st of each year during the term of this Agreement, a copy of fiscal year-end financial statements for the Facilities for the preceding fiscal year prepared in accordance with General Accepted Accounting Principles. At any time during the term of this Agreement and for three (3) years thereafter, Owner shall be entitled to inspect and make copies of the books and records of the Facilities maintained by Maxim, and Owner may conduct a separate audit of the Facilities and/or include the Facilities within the audit of Owner conducted by Owners independent auditors, all Monthly Financial Statements and all annual financial statements. As a Facilities Expense, Maxim shall comply with Owner's audit recommendations. Additionally, at the request of the Owner, Maxim will provide any and all supporting documentation that substantiates the monthly/annual Financial Statements.

9. OWNER'S OPTION TO TERMINATE FOR DEFAULT. At any time during the term of this Agreement, Owner shall have the option of terminating this Agreement upon the occurrence of an event of Default, as defined in subparagraph 9.a. below. At any time during this Agreement, Maxim shall have the option of terminating this Agreement for cause upon the occurrence of a material breach by Owner of any material term or provision of this Agreement, which breach remains uncured following notice and opportunity to cure as provided elsewhere in this Agreement.

a. Events of Default. Any one or more of the following events shall, unless cured in accordance with paragraph 9.b below, constitute a default of this Agreement by Maxim ("Default"):

- i. Any breach by Maxim or Owner of the obligations under

the terms of paragraph 5 of this Agreement;

- ii. A discontinuance by Maxim or Owner of its business or abandonment of its activities at the Facilities;
- iii. A material breach by Maxim or Owner of any material term or provision of this Agreement; or
- iv. The filing of a voluntary or involuntary action by Maxim, Owner or its creditors seeking to declare it as bankrupt.

b. Cure. Maxim shall have thirty (30) days after receipt of written notice from Owner specifying the nature of its Default under paragraph 9.a. above within which to cure such Default, or such longer period of time as may be reasonably required to cure such Default, provided that Maxim promptly commences the remedying of such Default and is continuing diligently to complete such cure. Owner shall have thirty (30) days after receipt of written notice from Maxim specifying the nature of its Default under paragraph 9. above within which to cure such Default, or such longer period of time as may be reasonably required to cure such Default, provided that Owner promptly commences the remedying of such Default and is continuing diligently to complete such cure, and provided further that Maxim will not discontinue performing services under this Agreement in the event that Owner disputes, in good faith, that it is in default until the parties have resolved the dispute.

c. Exercise of Termination Option. In the event of a Default, the Owner may terminate this Agreement upon expiration of the cure period described in subparagraph 9.b above by giving Maxim written notice of its election to terminate this Agreement, provided that Maxim has not timely cured the Default. Should Termination Option be exercised, Owner would pay to Maxim the Management Fee and Contingent Fee through the date of termination and reimburse Maxim for all expenses authorized under the terms of this Agreement incurred through the date of termination less damages caused by the breach. For purposes of this paragraph, the date of termination is the date specified by Owner in its notice to Maxim. In the event of a Default by Owner, Maxim may terminate this Agreement upon expiration of the cure period described in subparagraph 9.b above by giving Owner written notice of its election to terminate this Agreement, provided that Owner has not timely cured the Default, or is not diligently attempting to cure said default.

10. OPTION OF EARLY TERMINATION. Owner shall have the option to terminate this Agreement if any of the following occur without Owner approval: (1) Maxim or substantially all of its assets are sold without Owner's prior consent; (2) Maxim's management team or executive officers significantly change; (3) there is a change in control of Maxim or Owner finds reasonable evidence of fraud or defalcation of its funds or assets by employees or agents of Maxim. Owner may exercise the option for a period of six (6) months after receipt of notice that the respective event has occurred by notifying Maxim in writing. Unless otherwise agreed by the parties, the effective date of termination shall be thirty (30) days from the date Owner gives notice to Maxim except for evidence of theft or defalcation, in which Owner's Notice may be immediate. Early Termination shall not absolve the parties from any obligations of accounting and reimbursement for actions occurring prior to termination.

11. TRANSFER UPON TERMINATION. Upon termination of this Agreement, Maxim shall immediately transfer and assign to Owner any and all interest of Maxim in the Facilities if any,

including the assets set forth in subparagraph 11.a. below, and Owner shall assume and agree in writing to indemnify Maxim to the extent allowable by law against all liabilities set forth in subparagraph 11.b. below, and any existing obligations and liabilities relating to the Facilities authorized by the Annual Budget or approved by Owner. However, Owner shall have no obligation to indemnify Maxim for tort liabilities or other claims against Maxim that result from the negligence, intentional malfeasance, gross negligence or other misconduct of Maxim or its agents.

a. Assets to be Transferred. Assets to be transferred and assigned to Owner shall include, but not be limited to, all of Maxim's right, title and interest in and to any of the following arising out of activities of the Facilities or purchased by Maxim from Advances from Owner or Revenues of the Facilities (other than insurance proceeds relating to liabilities not required to be assumed by Owner, which proceeds will be assigned by Owner to Maxim):

- i. Cash in all Facility Accounts;
- ii. Accounts receivable;
- iii. Other receivables;
- iv. Inventories of merchandise, food, beverages and supplies;
- v. All equipment, furniture and fixtures;
- vi. Prepaid accounts and deposits;
- vii. Contract rights;
- viii. Trade names;
- ix. Books and records relating to the Facilities;
- x. Goodwill; and
- xi. Operational guidelines and procedures.

b. Liabilities to be Assumed. Liabilities Owner shall assume, or against which Owner shall indemnify Maxim to the extent allowable by law, shall be all debts and other contractual obligations arising out of the operation of the Facilities. Provided however, Owner shall have no obligation to indemnify Maxim for a debt or contractual obligation incurred by Maxim that was not authorized under the terms of this Agreement. Nothing in this provision shall negate obligations and responsibilities of either party as required under paragraph 12. .

c. Closing. The rights and responsibility of management of the Facilities shall transfer to Owner on the effective date of any termination of this Agreement unless the parties agree otherwise.

12. INDEMNITY. The parties agree that Maxim is not an agent or employee of Owner, and all activities of Maxim relating to the Facilities shall be in Maxim's capacity as independent contractor to

Owner.

a. Obligations of the Parties.. To the fullest extent permitted by law, Maxim agrees to defend with counsel selected by Owner, and indemnify and hold harmless Owner, its officers, engineers, representatives, agents, and employees from and against any and all liabilities, damages, losses, claims, or suits, including costs and attorneys' fees, for or on account of any kind of injury to person, bodily or otherwise, or death, or damage to or destruction of property, or any other circumstances, sustained by Owner or others, arising from breach or enforcement of this Agreement or out of services and operations negligently performed hereunder by Maxim, or claims relating thereto, and including but not limited to Owner's reliance on or use of the services or products provided by Maxim under the terms of this agreement or due to actions by Maxim or its agents that constitute a knowing disregard for the Owner's interest or Maxim's duty and obligations to Owner. To the fullest extent permitted by law, Owner agrees to indemnify and hold harmless Maxim, its officers, agents, and employees from and against any and all liabilities, damages, losses, claims, or suits, including costs and attorneys' fees, for or on account of any kind of injury to person, bodily or otherwise, or death, or damage to or destruction of property, or any other circumstances, sustained by Maxim or others, arising from breach or enforcement of this Agreement by Owner or out of Owner's negligence, or claims relating thereto,

b. Notice of Claims. Maxim and Owner shall provide each other with prompt written notice of any claim.

c. To the fullest extent permitted by law, Maxim agrees to defend with counsel selected by Owner, and indemnify and hold harmless Owner, its officers, engineers, representatives, agents, and employees from and against any and all liabilities, damages, losses, claims, or suits, including costs and attorneys' fees, for or on account of any kind of injury to person, bodily or otherwise, or death, or damage to or destruction of property, or any other circumstances, sustained by Owner or others, arising from breach or enforcement of this Agreement or out of services and operations negligently performed hereunder by Maxim, or claims relating thereto, and including but not limited to Owner's reliance on or use of the services or products provided by Maxim under the terms of this agreement or due to actions by Maxim or its agents that constitute a knowing disregard for the Owner's interest or Maxim's duty and obligations to Owner. To the fullest extent permitted by law, Owner agrees to indemnify and hold harmless Maxim, its officers, agents, and employees from and against any and all liabilities, damages, losses, claims, or suits, including costs and attorneys' fees, for or on account of any kind of injury to person, bodily or otherwise, or death, or damage to or destruction of property, or any other circumstances, sustained by Maxim or others, arising from breach or enforcement of this Agreement by Owner or out of Owner's negligence, or claims relating thereto,

13. INSURANCE. As an Expense of the Facilities, Maxim shall obtain insurance of the types and in the amounts set forth below from an underwriter(s) licensed to do business in the State of Missouri. Maxim shall furnish to Owner certificates of insurance or copies of policies, evidencing the required insurance, on or before April 1, 2023, and thereafter shall furnish new certificates upon request.

a. Type and Amount of Insurance. The type and amount of insurance Maxim shall obtain for the Facilities shall be:

Worker's Compensation and Employer's Liability or reasonably acceptable alternative as provided by law.

The Limits for the Employer's Liability shall be not less than:

Bodily Injury by Accident	\$1,000,000 Each Accident
Bodily Injury by Disease	\$1,000,000 Policy Limit
Bodily Injury by Disease	\$1,000,000 Each Employee

Commercial General Liability Policy with a Combined Single Limit of \$3,000,000.00/\$4,000,000.00 including (but not limited to) Premises/Operation, Independent Contractors, Personal Injury, and Products/Completed Operation.

Commercial crime coverage to include:

Forgery or alteration	\$25,000	\$ 1,000 ded.
Theft, Disappearance & Destruction	\$15,000	\$100 ded.
Employee Dishonest-Per Loss	\$300,000	\$10,000 ded.

Comprehensive Automobile Liability (or its equivalent) to include coverage for:

- a) Owned/Leased Automobiles
- b) Non-owned Automobiles
- c) Hired Cars

Limits of \$1,000,000.00 Liability for Bodily Injury and/or Property Damage.

Excess Liability for general and automobile liability purposes in the amount of \$10,000,000.

Additional Insured Endorsement.. With respect to the above-described insurance, Maxim agrees to:

- 1) Name the Owner an additional insured under its Commercial General Liability and Commercial Automobile Liability coverages per this contract. Each additional insured endorsement shall expressly afford coverage to the City not only for the name insured's operations or work, but also arising out of the named insured's completed operations. No provision of this contract or the additional insured endorsement coverage shall constitute a waiver of the City's right and ability to assert a defense based on the doctrines of sovereign immunity, official immunity, and/or qualified immunity. Further, it is understood that the coverage provided to the City on an additional insured basis does not apply to any claim or lawsuit which is barred by the doctrines of sovereign immunity, official immunity, or qualified immunity.

2. Provide for thirty days' written notice of cancellation, termination or any material change to the insurance.

3. All of the above stated limits shall apply separately to each location managed by Maxim.

14. COVENANT OF COOPERATION. Maxim shall provide Owner with prompt written notice of any material injuries suffered at the Facilities, significant complaints in reference to service or conditions, whether written or otherwise, about the Facilities or its management, and actual or anticipated disputes with or claims by third parties, including, but not limited to, adjacent landowners. Maxim further covenants to cooperate with Owner in resolving any such complaints, disputes or claims and Owner covenants to cooperate with Maxim in resolving any such complaints, disputes or claims.

15. OWNER'S REPRESENTATIONS AND WARRANTIES. To induce Maxim to enter into this Agreement, Owner makes the following representations and warranties to Maxim:

a. Each of the Recitals set forth in this Agreement is true and correct.

b. Owner has power and authority and all legal rights to enter into and perform this Agreement. The officers of Owner executing this Agreement are duly and properly in office and fully authorized to execute this Agreement, subject to express ratification by the Owner's Governing Body. This Agreement, when duly executed, ratified and delivered by the parties hereto, shall create a valid and binding obligation on the part of Owner, enforceable against Owner in accordance with its terms.

16. MAXIM'S REPRESENTATION AND WARRANTIES. To induce Owner to enter into this Agreement, Maxim makes the following representations and warranties to Owner:

a. Each of the Recitals set forth in this Agreement is true and correct.

b. Maxim Golf, LLC is a duly organized and validly existing company in good standing under the laws of the State of Missouri.

c. Maxim has the full power and authority and all legal rights to enter into and perform this Agreement and any other agreement referred to herein or contemplated by this Agreement. This Agreement, when duly executed and delivered by the parties hereto, shall create a valid and binding obligation on the part of Maxim, enforceable against Maxim in accordance with its terms.

d. Maxim has sufficient knowledge, training, expertise, skill and resources as to enable it to operate the Facilities in a reasonable and prudent business manner.

e. During the term of this Agreement, Maxim will use all reasonable care to prevent the introduction of any hazardous substances into the Facilities, whether contained in barrels, tanks, equipment (movable or fixed) or other containers deposited or located in land, water, sumps or any other part of the Facilities or incorporated into any structure on the Facilities. Maxim will hold owner harmless from and indemnify owner for any damages and expenses which owner may incur as a result of Maxim's failure to comply with this warranty. Owner acknowledges that some substances necessary for performance of this Agreement may be deemed "hazardous." Owner agrees that this paragraph shall not apply to such necessary substances, provided that Maxim uses all care necessary in the handling and use of such substances. Maxim shall take charge of all tangible personal property belonging to the Owner designated for use by the Neosho Golf Course and shall preserve and protect such property to the extent necessary while such property is utilized for the purposes of operations, to exclude reasonable wear and tear of said property. Said property shall not be transferred, borrowed or used by Maxim for other locations outside of the Owner's golf course without Owner's prior approval.

17. RELATIONSHIP OF THE PARTIES. The relationship between Owner and Maxim shall be and at all times remain that of owner and independent contractor, respectively. Neither Owner nor Maxim shall be construed or held to be a partner, limited partner, associate or agent of the other, or be joint venturers with one another. Neither Owner nor Maxim shall be authorized by the other to contract any debt, liability or obligation for or on behalf of the other.

18. CONFIDENTIALITY.

a. Each party agrees that Maxim will provide its knowledge and advice concerning marketing, equipment, financial models, membership retention and other expertise to the Owner, and Owner will provide similar information to Maxim ("Proprietary Information" of the disclosing party). Except as expressly allowed herein, the receiving party will hold in confidence and not use or disclose any Proprietary Information of the disclosing party, shall take reasonable protective measures to insure same (and at least the same measures it takes for its own Proprietary Information) and shall similarly bind its employees in writing. Nothing herein shall prevent Maxim Employees from disclosing Facility performance data to Neosho Golf Course's authorized representatives upon request as determined from time to time by its Board of Advisors, but such information should never be provided to Owner's patrons or competitors. The receiving party shall not be obligated under this Section with respect to information the receiving party can document:

- i. is or has become readily publicly available without restriction through no fault of the receiving party or its employees or agents; or
- ii. is received without restriction from a third party lawfully in possession of such information and lawfully empowered to disclose such information; or
- iii. was rightfully in the possession of the receiving party without restriction prior to its disclosure by the other party; or
- iv. was independently developed by employees or consultants of the receiving party without access to such Proprietary Information; or
- v. is required to be disclosed by law.

b. If either party breaches any of its obligations with respect to confidentiality, or if such a breach is likely to occur, the other party shall be entitled to equitable relief, including specific performance or an injunction, in addition to any other rights or remedies, including money damages, provided by law.

19. The obligation to keep this information confidential shall continue indefinitely during and following the termination of the term of this Agreement. GOVERNANCE. The parties agree to attempt informal dispute resolution before proceeding with further action. Specifically, should either party believe that a dispute has arisen, then that party shall meet and confer with a designated representative of the other party.

20. NOTICES. Except as otherwise specifically provided herein, any and all notices required or permitted under this Agreement shall be in writing and shall be deemed delivered upon personal delivery or upon mailing thereof when properly addressed and deposited in the United States Mail, first-class postage prepaid, registered or certified mail, return receipt requested, or when properly addressed upon deposit with Federal Express, Express Mail or other overnight courier service. Notices shall be properly addressed if addressed to the parties as follows:

<u>If to Owner:</u>	Agent for City of Neosho - Neosho Golf Course
Attn:	David Kennedy
	City Manager
	203 E Main Street
	Neosho, MO 64850

If to Maxim: Bryan Minnis
Chief Executive Officer
5757 East Eagle Knoll Dr
Hartsburg, MO 65039

The names and addresses for notices may be changed by written notice given to the other party as provided above.

21. FURTHER ACTS AND COMPETITION. Each party to this Agreement agrees to execute and deliver all documents and instruments and to perform all further acts and to take any and all further steps that may be reasonably necessary to carry out the provisions of this Agreement and the transactions contemplated herein. During the term of this Agreement Maxim will not directly or indirectly invest in nor provide services, whether or not for fees or other consideration, to another entity that has one or more golf courses any part of which is located in Randolph County, Missouri, unless agreed upon by Maxim and Owner.

22. SECTION HEADINGS. The section headings in this Agreement are for convenience of reference only and shall in no way define, limit, extend or interpret the scope of this Agreement or of any particular section contained herein.

23. INTERPRETATION. Unless the context requires otherwise, words used in the singular number shall include the plural and vice-versa; words used in the masculine shall include the feminine and vice-versa.

24. AMENDMENTS AND WAIVERS. This Agreement shall be modified only by written instrument executed by the parties hereto. Any waiver of any provision of this Agreement shall be made in writing executed by the party who could demand fulfillment of such waived provision.

25. ASSIGNMENT. This Agreement shall not be assigned by Maxim without the express written consent of Owner.

26. SUCCESSORS AND ASSIGNS. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns.

27. GOVERNING LAW. This Agreement shall be construed under and in accordance with the laws of the State of Missouri.

28. ATTORNEY FEES. If either party files suit in order to enforce any term of this Agreement and is the prevailing party, the other party shall be liable for prevailing party's reasonable attorney's fees and expenses.

29. COUNTERPARTS. This Agreement and all amendments and supplements to it may be executed in counterparts and all such counterparts shall constitute one agreement binding on both of the parties.

30. SEVERABILITY. Should one or more of the provisions of this Agreement be determined to be illegal or unenforceable, the other provisions nonetheless shall remain in full force and effect. The

illegal or unenforceable provision or provisions shall be deemed amended to conform to applicable laws so as to be valid and enforceable if such an amendment would not materially alter the intention of the parties.

31. ENTIRE AGREEMENT. This Agreement (together with any attached Exhibits) constitutes the entire agreement between the parties concerning the subject matter of this Agreement, and supersedes all prior agreements, arrangements, understandings, restrictions, representations or warranties, whether oral or written, between the parties relating to the subject matter of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

Owner:
City of Neosho, MO.

By: _____
Richard Davidson, Mayor
203 East Main Street
Neosho, MO 64850

ATTEST:

Cheyenne Wright, City Clerk

Maxim:
Maxim Golf , LLC.

By: _____
Bryan Minnis, Executive Officer
5757 East Eagle Knoll Dr
Hartsburg, MO 65039

EXHIBIT A

OWNER'S EXEMPTED FEE SCHEDULE

Green fees for Neosho Youth Golf Association. The green fees for Youth Golf Association members shall be \$0.00 per player per 18 holes without a cart.

The Women's Golf Associations may hold one tournament each year for green fees of \$16.00 per person per 18 holes with cart use, excluding any entry fee, for each eighteen (18) holes of tournament play.

As a benefit of employment, current City of Neosho full-time employees, part-time City of Neosho employees, that work an average of 25 hours a week, and retired City of Neosho employees with at least 5 years of service may play with cart for free. Proof of current employment status/City ID or proof of retirement from the City of Neosho may be required.

A Crowder College Golf Association student (ages 19-22) annual pass fee shall be \$200.00 per person per year.

Women's Golf Association shall be allowed reasonable use of the back room at the Club House at no charge, with such use being a secondary priority to paying Golf Groups.

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No 2024-07: FY24 Budget Amendment

ORIGINATING DEPARTMENT: Finance Department

ATTACHMENT:

1. Bill 2043-07 FY24 Amendment 2.6.2024

PURPOSE:

The purpose of this item is to amend City revenue and expenditure budgets to reflect changes since the adoption of the original FY24 budget under Bill no 2023-174.

BACKGROUND:

Staff is requesting to amend the budget for additional expenses and Capital Purchases.

<u>Fund</u>		<u>Increase (Decrease)</u>
100	General Fund	(\$163,427.00)
124	Shop With A Hero	\$12.00
130	Fire Fund	(\$169,545.00)
180	Park & Rec Fund	(\$48,753.00)
300	Capital Fund	(\$0.00)
310	Hotel Motel Fund	(\$45,218.00)
500	Water/Wastewater Fund	(\$150,824.00)
800	Street Department	(\$140,960.00)

Total City Increase (Decrease) in Fund Balance (\$718,715.00)

RECOMMENDATION:

Staff recommends adoption of the budget adjustments as set forth in the attached Bill.

AN ORDINANCE OF THE CITY OF NEOSHO, MISSOURI, PROVIDING THAT THE REVENUES AND EXPENDITURES BUDGET BE AMENDED FOR THE FISCAL YEAR BEGINNING OCTOBER 1, 2023 AND ENDING SEPTEMBER 30, 2024.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, AS FOLLOWS:

Section 1: That Ordinance No. 445-2023 is amended to read as follows:

The City Manager is hereby authorized to expend the funds as set forth in said budget. Receipts and disbursements shall be within the limits herein described and adopted by reference and shall be made in accordance with applicable laws and ordinances. These limits shall be referenced by fund as outlined

			Fund Bal.			
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>Increase (Decrease)</u>	<u>Transfers In (Out)</u>
100	Trns to Development Service	100-000-3225-115			50,000.00	50,000.00
100	Trns to Capital Impr/Purch	100-000-3285-111			(2,233.00)	(2,233.00)
100	Trns to Capital Impr/Purch	100-000-3285-115			(12,434.00)	(12,434.00)
100	Trns to Capital Improvement	100-000-3285-160			(498,538.00)	(498,538.00)
100	Trns to Capital Improvement	100-000-3285-204			(2,860.00)	(2,860.00)
100	General Admin Miscellaneous	100-110-4800-110	217,000.00		217,000.00	
100	Grant Revenue	100-160-4200-160	452,946.00		452,946.00	
100	General Admin Prof Services	100-110-5260-110		1,792.00	(1,792.00)	
100	General Admin Claims and Jud	100-110-5450-110		350,516.00	(350,516.00)	
100	Celebrate Neosho Shirt Sales	100-113-4480-755	(8,000.00)		(8,000.00)	
100	Fall Festival Sponsorships	100-113-4990-756	8,000.00		8,000.00	
100	I.O.O.F. Professional Service	100-204-5260-204		15,000.00	(15,000.00)	
GENERAL FUND TOTALS			\$669,946.00	\$367,308.00	(\$163,427.00)	(\$516,065.00)

			Fund Bal.			
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>Increase (Decrease)</u>	<u>Transfers In (Out)</u>
124	Shop With A Hero	124-124-4830-124	1,580.00		1,580.00	
124	Shop With A Hero Expense	124-124-6440-124		1,568.00	(1,568.00)	
SHOP WITH A HERO FUND TOTALS			\$1,580.00	\$1,568.00	\$12.00	\$0.00

			Fund Bal.			
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>Increase (Decrease)</u>	<u>Transfers In (Out)</u>
130	Trns to Capital Improvement	130-000-3285-000			(168,445.00)	(168,445.00)
130	Fire Uniforms	130-130-5380-130		1,100.00	(1,100.00)	
FIRE FUND TOTALS			\$0.00	\$1,100.00	(\$169,545.00)	(\$168,445.00)

			Fund Bal.			
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>Increase (Decrease)</u>	<u>Transfers In (Out)</u>
180	Trns to Capital Improvement	180-000-3285-000			(3,753.00)	(3,753.00)
180	Trasfer from Park Sales Tax	180-000-3390-000			(45,000.00)	(45,000.00)

PARK FUND TOTALS	\$0.00	\$0.00	(\$48,753.00)	(\$48,753.00)
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			Fund Bal.			
			Increase	Transfers		
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>(Decrease)</u>	<u>In (Out)</u>
300	Transfer fm City Clerk	300-000-3385-111			2,233.00	2,233.00
300	Transfer fm Development	300-000-3385-115			12,434.00	12,434.00
300	Transfer fm Fire Department	300-000-3385-130			168,445.00	168,445.00
300	Transfer fm Airport	300-000-3385-160			498,538.00	498,538.00
300	Transfer fm Parks & Rec	300-000-3385-180			3,753.00	3,753.00
300	Transfer fm Cemetery	300-000-3385-204			2,860.00	2,860.00
300	Transfer fm Streets Dept	300-000-3385-800			54,938.00	54,938.00
300	Capital Impr/Purch Clerk	300-300-5790-111		2,233.00	(2,233.00)	
300	Capital Impr/Purch Develop	300-300-5790-115		12,434.00	(12,434.00)	
300	Capital Impr/Purch Fire Dept	300-300-5790-130		168,445.00	(168,445.00)	
300	Capital Impr/Purch Airport	300-300-5790-160		498,538.00	(498,538.00)	
300	Capital Impr/Purch IOOF	300-300-5790-204		2,860.00	(2,860.00)	
300	Capital Impr/Purch Parks & Rec	300-300-5790-750		3,753.00	(3,753.00)	
300	Capital Impr/Purch Street Dept	300-300-5790-800		54,938.00	(54,938.00)	
CAPITAL FUND TOTALS			\$0.00	\$743,201.00	\$0.00	\$743,201.00

			Fund Bal.			
			Increase	Transfers		
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>(Decrease)</u>	<u>In (Out)</u>
310	Motel Promotions	310-310-5240-330		45,218.00	(45,218.00)	
HOTEL MOTEL FUND TOTALS			\$0.00	\$45,218.00	(\$45,218.00)	\$0.00

			Fund Bal.			
			Increase	Transfers		
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>(Decrease)</u>	<u>In (Out)</u>
500	Meter Program Part Time	500-530-5030-531		22,620.00	(22,620.00)	
500	Water Dist Capital Purchase	500-530-5790-530		27,449.00	(27,449.00)	
500	Wastewater Equip Maint	500-610-5330-610		12,500.00	(12,500.00)	
500	WW Vehicle	500-610-5780-610		19,763.00	(19,763.00)	
500	WW Capital Equipment	500-610-5790-610		16,537.00	(16,537.00)	
500	Alliance Contract	500-610-5800-520		11,973.00	(11,973.00)	
500	Alliance Contract	500-610-5800-610		40,082.00	(40,082.00)	
WATER/WASTEWATER FUND TOTALS			\$0.00	\$150,924.00	(\$150,824.00)	\$0.00

			Fund Bal.			
			Increase	Transfers		
<u>Fund</u>	<u>Account</u>	<u>Account Number</u>	<u>Revenues</u>	<u>Expenditures</u>	<u>(Decrease)</u>	<u>In (Out)</u>
800	Trns to Capital Improvement	800-000-3285-000			(54,938.00)	(54,938.00)
800	Street Contract Streets	800-800-5800-800		86,022.00	(86,022.00)	
STREET DEPARTMENT FUND TOTALS			\$0.00	\$86,022.00	(\$140,960.00)	(\$54,938.00)

Section 2: All other ordinances and parts of ordinances in conflict herewith are repealed.

Section 3: This ordinance shall be in full force and effect upon final passage and approval.

APPROVED after final passage this **February 20, 2024**.

CITY OF NEOSHO, CITY COUNCIL

MAYOR

APPROVED:

ATTEST:

CITY ATTORNEY

CITY CLERK

CITY SEAL

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No. 2024-08: Flynn Drilling Company, Inc.

ORIGINATING DEPARTMENT: Development Services Department

ATTACHMENT:

1. Bill No. 2024-08 Contract with Flynn Drilling for Pump Inspections
 2. Flynn Drilling Co. Contract
-

PURPOSE:

To enter into an agreement for inspections services with Flynn Drilling for annual inspections of our city wells.

BACKGROUND:

Flynn Drilling conducts annual inspections of municipalities for equipment related to wells. They provide condition reports and maintenance needs as a part of this agreement.

RECOMMENDATION:

To approve the contract with Flynn Drilling and authorize the Mayor to execute it.

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Agreement for consulting and inspection services with Flynn Drilling Company, Inc., a Missouri Corporation, for the purpose of providing annual inspections and routine maintenance service of the City's water system pump equipment for the not to exceed price of Three Hundred Twenty-five and 00/100 Dollars (\$325.00) per pump; and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Agreement for consulting and inspection services by and between the City of Neosho, Missouri, and Flynn Drilling Company, Inc., a Missouri Corporation, for the purpose of providing annual inspections and routine maintenance service of the City's water system pump equipment for the not to exceed price of Three Hundred Twenty-five and 00/100 Dollars (\$325.00) per pump; a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit "A," be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho, Missouri, is hereby authorized and directed to execute said Agreement by and on behalf of the City of Neosho.

Section 3. That this Ordinance shall be in full force and effect from and after its passage.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

INDEPENDENT CONTRACTOR AGREEMENT

This AGREEMENT is entered into this 31st day of January, 2024 ("the Effective Date"), by and between the City of Neosho, Missouri (hereinafter "City"), and Flynn Drilling Co., a Missouri Corporation (hereinafter "Contractor"), and with City and Contractor being referred to collectively as "the Parties."

WHEREAS, City desires to engage an independent contractor for the purpose of providing annual inspections and routine maintenance service of the City's water system pump equipment; and

WHEREAS, Contractor desires to be engaged as an independent contractor for the purpose of providing annual inspections and routine maintenance service of the City's water system pump equipment; and

NOW, THEREFORE, in exchange for valuable consideration each received from the other, the receipt and sufficiency of which is hereby acknowledged, the Parties do hereby agree as follows:

1. Term. The term of this Agreement will begin on the Effective Date and end on December 31, 2024, unless terminated sooner as provided herein. However, the indemnification requirements of paragraph 14 and warranty provisions of paragraph 22 will survive termination of this Agreement. This Agreement will automatically renew each calendar year, unless terminated as provided for herein.

2. Contractor's Services. Contractor agrees to diligently perform in a professional and workmanlike manner the scope of services to include inspection and performance of routine service on pumping equipment to assure that inspected equipment is within reasonable operational condition when compared to the same equipment's original performance standards. Such inspections will be limited to performance evaluation of the pump, motor, motor control system, electrical power supply, water level indicators, check valves and packing or seals.

a) Inspections of equipment shall include Contractor's determination of pump output (gpm), pressure, and shut-off head. Such determination will be based on a comparison to the original design parameters and historical data to evaluate the condition of the pump on the basis of performance. The electrical supply and motor will be evaluated through the measurement of voltage, amperage and a megger check (insulation test) to determine its condition. Such data and information will be compared to design parameters and historical data to evaluate the performance of the electrical components in the pumping system. The motor control section will be operated to verify performance and identify potential operation or maintenance problems. Terminal connections will be checked for arcing and cleaned and tightened if necessary.

b) Routine service of equipment shall include inspections and adjustments of seals or packing, automatic oilers, screens and vents, thermal overloads, motor protection equipment, line shaft impeller positioning, check valve integrity, electrical terminal cleaning and adjustment, lubrication of bearings and any and all other components as reasonably required for proper service.

c) Reports shall be delivered by Contractor to City after each system inspection to provide a comprehensive detail of findings of inspection and evaluation. The report shall also indicate any recommendations from the Contractor regarding preventive and corrective maintenance necessary for the City's pumping equipment. Reports shall describe the conditions observed on the time and date of the inspection only. Such inspection does not guarantee the continued satisfactory operation of the pumping equipment and related components.

d) The Contractor shall provide any and all specialized services and repairs necessary to the City's pumping equipment during the term of this Agreement. The costs of any required corrective maintenance will be billed at a rate equal to the usual customary rate charged by Contractor for the same or similar services, less ten percent (10%) along with the costs of necessary components at competitive component pricing based on industry compared pricing for said components at the time of service and six (6) months prior to said service. Such services shall be provided by Contractor to City at a priority status and within 24 hours of notification by City of the need for such services the Contractor shall have service representatives on-site.

3. Costs and Payment. City will pay Contractor as set forth herein, which shall constitute full and complete compensation for Contractor's work. City will pay Contractor an annual base fee of THREE HUNDRED TWENTY-FIVE and 00/100 Dollars (\$325.00) per pump with this rate to remain the same for three (3) years from date of this Agreement and any adjustment thereafter to be subject to annual adjustments not to exceed five percent (5%) per year. Contractor will provide all labor, materials, and equipment subject to costs of corrective maintenance as described above in paragraph 2.(d).

4. Independent Contractor. This Agreement does not create an employer-employee relationship between the parties. Contractor is an independent contractor and is not entitled to any benefits including health, dental, vision, disability, life, and unemployment insurance, worker's compensation coverage, and LAGERS. Contractor is an independent contractor and not an employee for all purposes including the application of the Fair Labor Standards Act Minimum Wage and Overtime Payments, Federal Insurance Contribution Act, Social Security Act, Federal Unemployment Tax Act, and the provisions of the Internal Revenue Code, Missouri Revenue and Taxation Laws, and Missouri's Worker Compensation Laws and Unemployment Insurance Laws.

5. Amendments. The covenants and obligations herein contained are the full and complete terms of this Agreement, and no alteration, amendments, or changes to such terms shall be binding unless first reduced to writing and executed with the same formality as this Agreement.

6. Assignment. This Agreement, including payment hereunder, shall not be sub-let, assigned, or otherwise disposed of, except with the prior written consent of the City.

7. Attorney's Fees and Expenses. If City files suit in order to enforce any term of this Agreement and is the prevailing party, Contractor shall be liable for City's reasonable attorney's fees and expenses. In no event shall City be liable for Contractor's reasonable attorney's fees and expenses.

8. Choice of Law and Venue. This Agreement has been made, and its validity, performance and effect shall be determined, in accordance with the laws of the State of Missouri

and venue for litigation between the parties shall be solely and exclusively in Newton County, Missouri.

9. Compliance with Laws. Contractor shall observe and comply with all Federal, State, and local laws and ordinances that affect those employed or engaged by it on the project, or the material or equipment used, or the conduct of the work, and shall procure all necessary licenses, permits, and insurance.

10. Consequential Damages. In no event shall City be liable to Contractor for special, indirect, or consequential damages.

11. Contract Documents. The contract documents shall consist of the Agreement.

12. Entire Agreement. This Agreement (including any Exhibits) contains the entire understanding of the parties with respect to the subject matter hereof. It may not be altered or amended except by an agreement in writing signed by both parties.

13. Headings. The headings of paragraphs in this Agreement are for convenience only. The headings form no part of this Agreement and shall not affect its interpretation.

14. Indemnification. To the fullest extent permitted by law, Contractor agrees to defend with counsel selected by City, and indemnify and hold harmless City, its officers, engineers, representatives, agents, and employees from and against any and all liabilities, damages, losses, claims, or suits, including costs and attorneys' fees, for or on account of any kind of injury to person, bodily or otherwise, or death, or damage to or destruction of property, or any other circumstances, sustained by City or others, arising from breach or enforcement of this Agreement or out of services and operations negligently performed hereunder by Contractor, or claims relating thereto, and including but not limited to City's reliance on or use of the services or products provided by Contractor under the terms of this agreement. Contractor shall not be liable for any loss or damage attributable solely to the negligence of City. To the extent required by law to enforce this provision, Contractor agrees that this indemnification requires Contractor to obtain insurance in amounts specified herein and that Contractor has had the opportunity to recover the costs of such insurance in the Payment set forth in this Agreement.

15. Insurance. Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Agreement, insurance of such types and in such amounts as may be necessary to protect it and the interests of City against all hazards or risks of loss as hereunder specified or which may arise out of the performance of this Agreement. Such policies shall name City as an additional insured, with limits of liability not less than the sovereign immunity limits for Missouri public entities calculated by the Missouri Department of Insurance as of January 1 each calendar year and published annually in the Missouri Register pursuant to Section 537.610, RSMo. (See, <http://insurance.mo.gov/industry/sovimunity.php>)

16. Representations. The signatories hereto represent and warrant that they have read this Agreement, that they are fully authorized in the capacities shown, that they understand the terms of this Agreement, and that they are executing the same voluntarily and solely for the

consideration described herein.

17. Severability. If any of the provisions of this Agreement shall be construed to be invalid or illegal, the legality or validity of the other provisions of this Agreement shall not be effected thereby. Any illegal or invalid provision of this Agreement shall be severable and any other provisions shall remain in full force and effect.

18. Termination. City reserves the right to terminate this contract by giving at least five (5) days prior written notice to Contractor, without prejudice to any other rights or remedies of City, should Contractor be adjudged bankrupt, or if Contractor should make a general assignment for the benefit of its creditors, or if a receiver should be appointed for Contractor or for any of its property, or if Contractor should persistently or repeatedly fail or refuse to supply enough properly skilled workmen or proper material, or if Contractor should fail or refuse to make prompt payment to any person supplying labor or materials for the work under the contract, or persistently disregard instructions of City or fail to observe or perform any provisions of the contract. City or Contractor may terminate this Agreement, without cause, by giving thirty (30) days' written notice of the same.

19. Third-Party Beneficiaries. This Agreement shall not confer any rights or remedies upon any person other than the parties and their respective successors and permitted assigns.

20. Unauthorized Aliens. That pursuant to Missouri Revised Statute Sections 285.525 through 285.555, if this contract exceeds the amount of \$5,000.00 and Contractor is associated with a business entity, Contractor shall provide an acceptable notarized affidavit stating that the associated business entity is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services, and that said business entity does not knowingly employ any person who is an unauthorized alien in connection with the contracted services. Additionally, Contractor must provide documentation for said business entity evidencing current enrollment in a federal work authorization program.

21. Waiver. Waiver of any provision of this Agreement or breach of this Agreement shall not thereafter be deemed to be a consent by the waiving party to any further waiver, modification or breach by the other party, whether new or continuing, of the same or any other covenant, condition or provision of this Agreement. Failure by one of the parties to this Agreement to assert its rights for any breach of this Agreement shall not be deemed a waiver of such rights.

22. Warranty. In addition to any other warranties in this Agreement, specifically any manufacturer/dealer warranty on parts and labor, Contractor warrants that work performed under this Agreement conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of 1 year from the date of final acceptance of the work. Contractor shall remedy at Contractor's expense any failure to conform or any defect. In addition, Contractor shall remedy at Contractor's expense any damage to City's real or personal property, when that damage is the result of: (1) Contractor's failure to conform to contract requirements; or (2) any defect of equipment, material, workmanship, or design furnished by Contractor. Contractor shall restore any work damaged in fulfilling the terms and conditions of

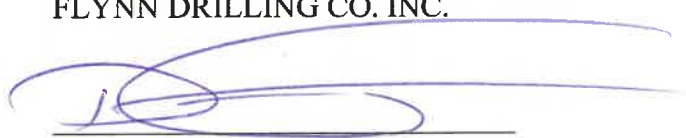
this clause. Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement. City will notify Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage. If Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, City shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at Contractor's expense. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, Contractor shall: (1) obtain all warranties that would be given in normal commercial practice; (2) require all warranties to be executed, in writing, for the benefit of City, as directed by City; and (3) enforce all warranties for the benefit of City. This warranty shall not limit City's rights with respect to latent defects, gross mistakes, or fraud.

IN WITNESS WHEREOF, the Parties have hereunto set their hands the date first above written.

CITY OF NEOSHO, MISSOURI

FLYNN DRILLING CO. INC.

Richard Davidson, Mayor



authorized representative

ATTEST:

Cheyenne Wright, City Clerk

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No. 2024-09: Superion Newton County Public Safety Software

ORIGINATING DEPARTMENT: Fire Department

ATTACHMENT:

1. Bill No. 2024-09 MOU w Newton County for Superion Software 2024
 2. MOU for Superion Software - Newton County Dispatch
-

PURPOSE:

The purpose of this Agenda item is to get approval for an MOU with Newton County Central Dispatch.

BACKGROUND:

A year ago, we had computers placed in our fire trucks, so we could receive dispatch information as well and mapping to help us while responding to calls. The software that dispatch had purchased and planned for all Newton County fire departments to us is not working with our computers in our trucks. We need to switch software and begin using the MDT software that law enforcement in Newton County is using. It has proven to work all over the county, and is reliable. Currently, the software we are using is very unreliable, and seldom works. I am asking the Council's permission to approve the MOU with Newton County CDC, so we can begin using software that will work for my department.

RECOMMENDATION:

Staff recommends approval of the MOU, and the Mayor to sign.

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into a Memorandum of Understanding and Agreement with Newton County of the State of Missouri, for the purpose of providing access and use to Superior's Newton County Public Safety and Law Enforcement Software for use by the Neosho Fire Department for use in fire protection services; and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Memorandum of Understanding ("MOU") by and between the City of Neosho and Newton County, Missouri, for the purpose of providing access and use to Superior's Public Safety and Law Enforcement Software for use by the Neosho Fire Department for use in fire protection services, a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit "A," be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho, Missouri, is hereby authorized and directed to execute said MOU by and on behalf of the City of Neosho.

Section 3. That this Ordinance shall be in full force and effect from and after its passage.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

MEMORANDUM OF UNDERSTANDING (MOU)

SUPERION-Newton County Public Safety and Law Enforcement Software

Between Newton County and City of Neosho (Neosho Fire Department)

This is an agreement between Newton County and the City of Neosho. This agreement will be in effect as long as above mentioned Superion software is utilized.

I. Purpose and Scope

The purpose of this MOU is to clearly identify the following cost: Beginning in 2024 and forward, annual maintenance cost of approximately \$800 for access by the Neosho Fire Department. The annual maintenance cost is subject to a CPI or 3% cap increase annually.

I. Newton County RESPONSIBILITIES UNDER THIS MOU

Newton County shall undertake the following activities:

- Newton County will make available and maintain the host server and application.
- Newton County will not be responsible for any 3rd party hardware, software, or maintenance.
- If the City of Neosho does not submit annual maintenance amount due by March 1st of each year, Newton County will remove access to the system.

II. City of Neosho RESPONSIBILITIES UNDER THIS MOU

City of Neosho shall undertake the following activities:

- City of Neosho will be responsible for making subsequent year maintenance cost payments, if they desire NFD to participate in usage of the system.
- City of Neosho shall submit annual maintenance amount by March 1st of each year, otherwise Newton County will remove access to the system.
- City of Neosho will be responsible for all 3rd party hardware, software, and maintenance.

III. Effective Date and Signature

This MOU shall be in effect upon the signatures of Newton County and City of Neosho authorized officials. The organizations indicate agreement with this MOU by their signatures.

FOR NEWTON COUNTY:



Daniel Swem
Presiding Commissioner

12-7-23

Date

FOR CITY OF NEOSHO:

Richard Davidson
City of Neosho Mayor

Date

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No. 2024-10: Change Order for MoDOT 21-096A-2 Airport T-Hanger

ORIGINATING DEPARTMENT: Development Services Department

ATTACHMENT:

1. Bill No. 2024-10 Ch Ord 2- K w Emery Sapps Sons RE airport t-hanger taxilane
 2. Change Order #2 - Neosho MO - ESS - Signed
-

PURPOSE:

The purpose of this item is to gain the council's approval for the mayor to sign a change in order for the contract to construct taxiways.

BACKGROUND:

This ordinance authorizes change order no. 2 for an Agreement for Construction Services with Emery Sapp & Sons, Inc., cost over run in the amount of \$2,500.00 and authorizing the Mayor to execute the same by and on behalf of the City of Neosho. This over run is for seeding the disturbed are around the taxiway.

RECOMMENDATION:

Staff recommends the council approve the mayor's signature.

AN ORDINANCE of the City of Neosho authorizing Change Order No. 2 for an Agreement for Construction Services with Emery Sapp & Sons, Inc., a Missouri Corporation for cost underrun in the amount of TWO THOUSAND FIVE HUNDRED and 00/100 Dollars (\$2,500.00) and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the City of Neosho and Emery Sapp & Sons, Inc., a Missouri Corporation entered an Agreement for Construction Services for the purpose of constructing a t-hangar taxilane at the Neosho Hugh Robinson Airport and that Change Order #2 for cost underrun in the amount of Two Thousand Five Hundred and 00/100 Dollars (\$2,500.00), a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit "A," be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho, Missouri, is hereby authorized and directed to execute said Agreement and Change Order #2 by and on behalf of the City of Neosho.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of _____, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Bill No. 2024-11: Contract with CSG for All Irrigation Water Intake Repairs-Golf Course

ORIGINATING DEPARTMENT: City Clerk

ATTACHMENT:

1. Bill No. 2024-11 Contract with Marion Co. Const Serv Group- Golf Irrigation
 2. Agreement Neosho and Marion Co - Golf Course Irrigation
-

PURPOSE:

Awarding services as bid out for the golf course intake structure.

BACKGROUND:

The intake structure supplies water to the irrigation system for the entire golf course. Over the years, the intake structure has deteriorated and needs rebuilding. Also, the area around the structure needs dredging, and the lake banks need redesigning.

The city sent out bids for rebuilding the intake structure and rebuilding the banks of the pond. We received a bid from CSG in the amount of \$34,301.00.

This was the only bid received.

RECOMMENDATION:

To accept the bid for CSG in the amount of \$34,301.00 and authorize the Mayor to execute the contract.

AN ORDINANCE authorizing the City of Neosho, Missouri, to enter into an Agreement for Construction Services with Marion Company, LLC, d/b/a Construction Services Group, a Missouri Limited Liability Company, for the purpose of providing construction services related to Neosho Golf Course irrigation water intake repair for the not to exceed price of Thirty-Four Thousand Three Hundred one and 00/100 Dollars (\$34,301.00); and authorizing the Mayor to execute the same by and on behalf of the City of Neosho.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, as follows:

Section 1. That the Agreement for Construction Services by and between the City of Neosho, Missouri, and Marion Company, LLC, d/b/a Construction Services Group, a Missouri Limited Liability Company, for the purpose of providing construction services related to Neosho Golf Course irrigation water intake repair for the not to exceed price of Thirty-Four Thousand Three Hundred one and 00/100 Dollars (\$34,301.00), including repair of No. 16 Fairway and replacement cart path, a true and accurate copy of said Agreement being attached hereto and incorporated as Exhibit "A," be and the same is hereby approved.

Section 2. That the Mayor of the City of Neosho, Missouri, is hereby authorized and directed to execute said Agreement by and on behalf of the City of Neosho.

Section 3. That this Ordinance shall be in full force and effect from and after its passage.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this ____ day of February, 2024, by a vote of _____.

Richard Davidson, Mayor

ATTEST:

Cheyenne Wright, City Clerk

APPROVED AS TO FORM:

Derek A. Snyder, City Attorney

THIS AGREEMENT, made this ____ day of _____, 2024, by and between CITY OF NEOSHO, MISSOURI hereinafter called "OWNER" and MARION COMPANY, LLC, doing business as a CONSTRUCTION SERVICES GROUP, hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of Neosho Golf Course irrigation water intake repair, including repair of No. 16 Fairway and replacement cart path.
2. The CONTRACTOR will furnish all of the materials, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.
3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS on the date as stipulated in the NOTICE TO PROCEED and will complete same within **90** consecutive calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of THIRTY FOUR THOUSAND THREE HUNDRED ONE & 00/100 DOLLARS (\$34,301.00), or as shown in the BID Schedule, including Alternate Bid Items.
5. The term "CONTRACT DOCUMENTS" means and includes the following:
 - (A) Invitation\Advertisement to Bid
 - (B) Instruction to Bidders
 - (C) Bid
 - (D) Bid Bond
 - (E) Agreement Form
 - (F) General Conditions of the Contract
 - (G) Supplemental General Conditions
 - (H) Payment Bond
 - (I) Performance Bond
 - (J) Notice of Award
 - (K) Notice to Proceed
6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the Bid Specifications.
7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in **three (3)** counterparts, each of which shall be deemed an original on the date first above written.

(SEAL)

OWNER:

C:\Users\cwright.NEOSHO.001\AppData\Local\Microsoft\Windows\I\NetCache\Content.Outlook\9HJNLZN\Agreement Neosho and Marion Co - Golf Course Irrigation.docx

ATTEST:

City of Neosho, Missouri

Cheyenne Wright

By: _____

City Clerk

Name: Richard Davidson

Title: Mayor

(SEAL)

ATTEST:

CONTRACTOR:

Marion Company, LLC.

Name (Please Type)

By: _____
Tyler Marion

Title

Address

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Resolution Bill No. 2024-04: Blight for 224 N Washington St (Schaffer Building).

ORIGINATING DEPARTMENT: Development Services Department

ATTACHMENT:

1. Res. Bill No. 2024-04 Neosho Slum and Blight Resolution for DTR 2024
 2. 224 N Washington Dangerous Building investigation
 3. 224 N Washinton Dangerous Building Letter
-

PURPOSE:

The purpose of this item is to gain council's approval for the mayor to sign a resolution declaring the structure at 224 N Washington St. blighted.

BACKGROUND:

This structure was purchased by the city with the intention of demolishing it and reusing the location. The council has previously approved applying for a grant to help finance the demolition. This resolution of blight is an element of the grant application process.

RECOMMENDATION:

Staff recommends the council authorize the mayor's signature on the resolution.

RESOLUTION BILL NO. 2024-04

DECLARATION OF A SLUM AND BLIGHTED

A RESOLUTION of the City of Neosho, Missouri declaring 224 North Washington Street as a blighted area and structure.

WHEREAS, the City of Neosho is concerned about the lack of economic viability of a slum and blighted area within its corporate limits, and

WHEREAS, the slum and blighted area projects a negative visual image of the community, and

WHEREAS, the economic, social, physical, and cultural well-being of the City is adversely affected by the conditions of this slum and blighted area, and

WHEREAS, there exists the opportunity to improve, preserve, and re-develop this slum and blighted area to the benefit of the community, and

WHEREAS, the slum and blighted area qualifies as such under the provisions of ordinance 2023-197 passed in Council on 19th of December 2023, and

WHEREAS, the following detrimental conditions have been identified which qualify the area under State law and Community Development Block Grant Program requirements:

At least 25% of the building is deteriorated or deteriorating, and has the following characteristics:

Deteriorating masonry, deficient utilities, partial roof collapse, partial second floor collapse, partial first floor collapse, mold infestation.

Abandoned since the 1980's.

NOW THEREFORE, BE IT RESOLVED, that the following area is designated a "Slum and Blighted Area"

224 North Washington Street, also known as the Schaffer Building, has been an abandoned building since 1980's. The structure at 224 North Washington Street has deteriorating masonry, deficient utilities (no utilities), partially collapsed roof, partially collapsed second floor, partially collapsed main floor, and mold infestation.

This Resolution shall be in full force upon February 6, 2024, and all other resolutions in conflict herewith are repealed.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this 6th day of February, 2024, by a vote of _____.

CITY OF NEOSHO, CITY COUNCIL

Mayor

ATTEST:

Clerk

APPROVED:

City Attorney

CITY SEAL

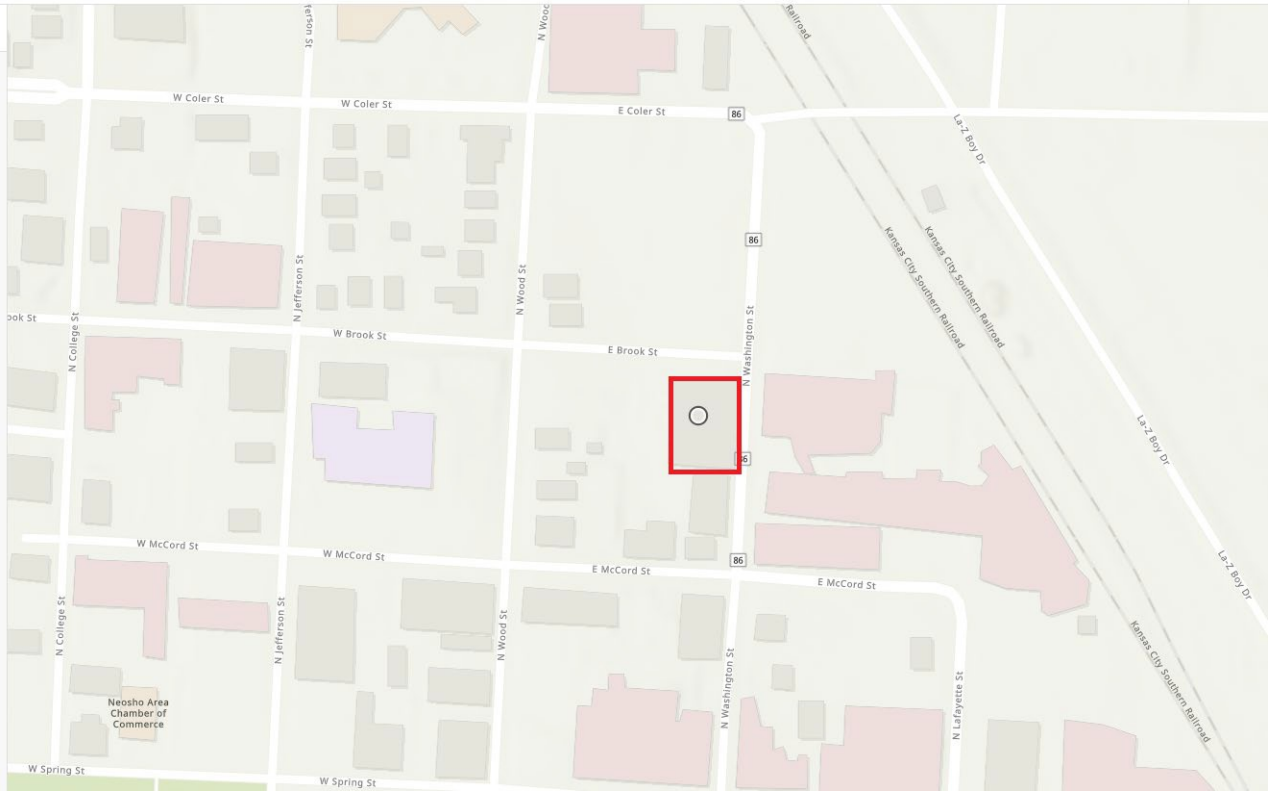
Section 525.020 Dangerous Buildings Defined.

[Ord. No. 95-28 §1(7-49), 5-2-1995]

A. All buildings or structures that are detrimental to the health, safety or welfare of the residents of the City and that have any or all of the following defects shall be deemed "*dangerous buildings*":

1. Those with interior walls or other vertical structural members that list, lean or buckle to such an extent that a plumb line passing through the center of gravity falls outside the middle third of its base.
2. Those that, exclusive of the foundation, show thirty-three percent (33%) or more damage or deterioration of the supporting member or members, or fifty percent (50%) damage or deterioration of the non-supporting enclosing or outside walls or covering.
3. Those that have improperly distributed loads upon the floors or roofs, or in which the same are overloaded or that have insufficient strength to be reasonably safe for the purpose used.
4. Those that have been damaged by fire, wind or other causes so as to become dangerous to life, safety or the general health and welfare of the occupants or the people of the City.
5. Those that are so dilapidated, decayed, unsafe, unsanitary or that so utterly fail to provide the amenities essential to decent living that they are unfit for human habitation, or are likely to cause sickness or disease, so as to work injury to the health, safety or welfare of those occupying such building.
6. Those having light, air and sanitation facilities that are inadequate to protect the health, safety or general welfare of human beings who live or may live therein.
7. Those having inadequate facilities for egress in case of fire or panic or those having insufficient stairways, elevators, fire escapes or other adequate means of evacuation.
8. Those that have parts thereof that are so attached that they may fall and injure members of the public or property.
9. Those that because of their condition are unsafe, unsanitary or dangerous to the health, safety or general welfare of the people of this City.

Map and Boundary





City of Neosho

203 E. Main Street
Neosho, MO, 64850

417 / 451-8050 phone
417 / 451-8065 facsimile

www.neoshomo.gov

Dangerous building at 224 N. Washinton St (Shaffer Building)

The Building Inspector and Code Enforcement has inspected the building at 224 N. Washington St. and found it to be a dangerous building within the standards set forth in Section 525.020.

At first notice there is visible mold on the interior walls, the building has an obnoxious odor consisting of mold and mildew. As we went further into the building, we discovered the second story floor was collapsing and a section on the southwest side had completely collapsed, onto the first floor.

As we went to the north side of the building, we observed where the roof had begun collapsing and had caused significant damage to the first floor. The first-floor slabs are cracked in several spots, a slab has collapsed into the basement causing a safety hazard to anyone that may go inside the building. Another slab was cracking in the middle and appeared that it was going to collapse.

The interior walls and roof had significant water damage. We inspected the building while it was raining, there were numerous leaks in the building and at one section where the roof had collapsed there was a steady stream of water flowing into the building.

The overall condition of the building is unsafe and unsanitary to the people of the city or anyone that may be in or around the building. Some photographs have been attached to this report for reference.

Specifically, the following are the particulars that make the building or structure a dangerous building:

- ☐ Those that, exclusive of the foundation, show thirty-three percent (33%) or more damage or deterioration of the supporting member or members, or fifty percent (50%) damage or deterioration of the non-supporting enclosing or outside walls or covering.
- ☐ Those that have been damaged by fire, wind or other causes so as to become dangerous to life, safety or the general health and welfare of the occupants or the people of the City.
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- ☐ Those that have parts thereof that are so attached that they may fall and injure members of the public or property.
- ☐ Those that because of their condition are unsafe, unsanitary or dangerous to the health, safety or general welfare of the people of this City.

In conclusion, the building has deteriorated beyond the point of being economically feasible to repair, with the damage already sustained this building will continue to deteriorate rapidly.

Thank you,



Matt Brown
Building Inspector



City of Neosho

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Image 1- Visible mold on interior walls



Image 2- Second story collapsing



Image 3- Second story collapsing



Image 4- Roof collapsing on backside of building.



Image 5- First story floor collapsing into basement.



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January 19, 2024

Missouri Department of Economic Development
Community Development Block Grant Application

Address: 224 N Washington Street
Property Number: 15-4.0-19-003-010-001.000
Tax ID Number: 5-49113-0

The property located at 224 N Washington Street, Neosho, MO is a two and a half story brick structure located two blocks north of the Neosho downtown square is blighted and deteriorated beyond economically feasible rehabilitation.

Known as the Schaffer Building, 224 N Washington Street was constructed around 1910 and has housed several businesses over the years. It has not been occupied in several decades and since then much of the interior has been removed or vandalized. The windows have been boarded over, and parts of the property have become overgrown.

The city purchased this property in late 2023 and would like to clear it for future municipal development. To achieve that goal, the city is requesting funds to assist in the structure's demolition.

Sincerely,

A handwritten signature in blue ink, appearing to read "David Kennedy", is written over a circular blue ink stamp. The signature is fluid and cursive.

David Kennedy
City Manager

RESOLUTION BILL NO. 2024-04

DECLARATION OF A SLUM AND BLIGHTED

A RESOLUTION of the City of Neosho, Missouri declaring 224 North Washington Street as a blighted area and structure.

WHEREAS, the City of Neosho is concerned about the lack of economic viability of a slum and blighted area within its corporate limits, and

WHEREAS, the slum and blighted area projects a negative visual image of the community, and

WHEREAS, the economic, social, physical, and cultural well-being of the City is adversely affected by the conditions of this slum and blighted area, and

WHEREAS, there exists the opportunity to improve, preserve, and re-develop this slum and blighted area to the benefit of the community, and

WHEREAS, the slum and blighted area qualifies as such under the provisions of ordinance 2023-197 passed in Council on 19th of December 2023, and

WHEREAS, the following detrimental conditions have been identified which qualify the area under State law and Community Development Block Grant Program requirements:

At least 25% of the building is deteriorated or deteriorating, and has the following characteristics:

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Abandoned since the 1980's.

NOW THEREFORE, BE IT RESOLVED, that the following area is designated a "Slum and Blighted Area"

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This Resolution shall be in full force upon February 6, 2024, and all other resolutions in conflict herewith are repealed.

PASSED BY THE COUNCIL OF THE CITY OF NEOSHO, MISSOURI, this 6th day of February, 2024, by a vote of _____.

CITY OF NEOSHO, CITY COUNCIL

Mayor

ATTEST:

Clerk

APPROVED:

City Attorney

CITY SEAL

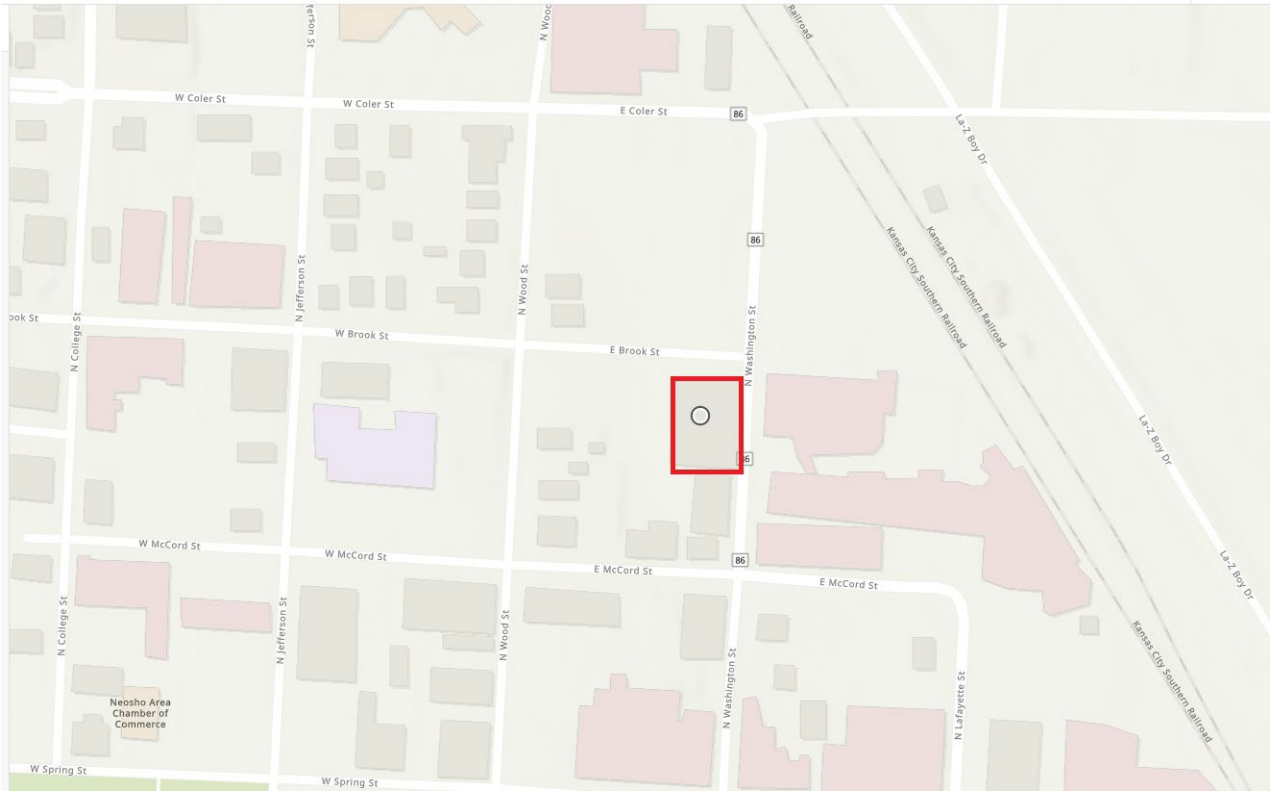
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Map and Boundary





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Thank you,



Matt Brown
Building Inspector



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Image 1- Visible mold on interior walls



Image 2- Second story collapsing



Image 3- Second story collapsing



Image 4- Roof collapsing on backside of building.

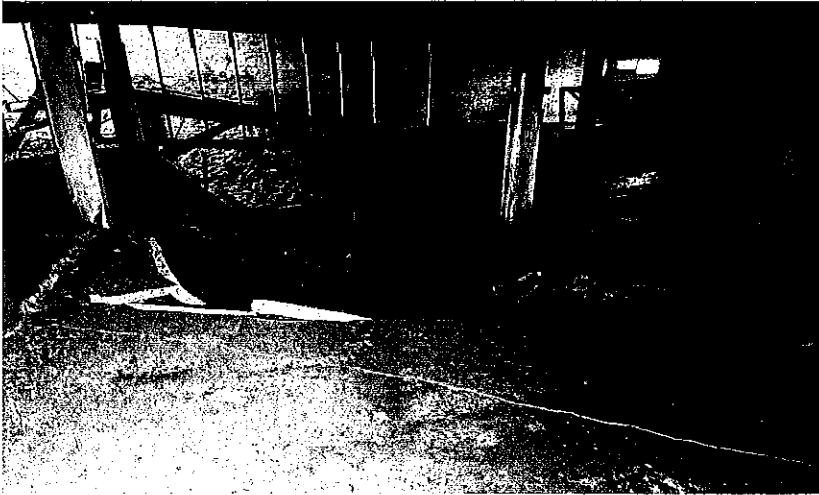


Image 5- First story floor collapsing into basement.



City of Neosho

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January 19, 2024

Missouri Department of Economic Development
Community Development Block Grant Application

Address: 224 N Washington Street
Property Number: 15-4.0-19-003-010-001.000
Tax ID Number: 5-49113-0

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The city purchased this property in late 2023 and would like to clear it for future municipal development. To achieve that goal, the city is requesting funds to assist in the structure's demolition.

Sincerely,

A handwritten signature in blue ink, appearing to read "David Kennedy", is written over a blue circular stamp or seal.

David Kennedy
City Manager

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: NLC - Service Line Warranty Customer Letter

ORIGINATING DEPARTMENT: Finance Department

ATTACHMENT:

1. Neosho_MO documents with logo

PURPOSE:

Seek Council's guidance and input on letters to be mailed to Neosho water and wastewater customers for the Service line warranty program.

BACKGROUND:

On January 16, 2024, Resolution 2024-02 was approved by the Council, agreeing to allow Utility Service Partners Private Label, Inc d/b/a Service Line Warranties of America to offer their warranty program to residential customers.

RECOMMENDATION:

Staff recommends moving forward with the letters as presented.



PRSRT STD
U.S. POSTAGE
PAID
MAILED FROM
ZIP CODE 33310
PERMIT NO. 750



JZS



City of Neosho

Missouri

Dear City of Neosho Homeowner;

The City of Neosho has allowed Service Line Warranties of America (SLWA)*, an independent company and an administrator of home emergency repair solutions to homeowners nationwide, to offer Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage to Neosho homeowners.

Many homeowners are not aware that they are responsible for certain repairs; for example, many Americans don't know that they are responsible to pay for repairs to water service and sewer/septic lines on their private property. Many homeowners are not prepared to handle the high costs of unexpected water service or sewer/septic line breakdowns.

Optional plans from SLWA can help protect you from the potentially expensive repair costs of water and sewer/septic lines inside and outside your home.

The enclosed information is provided to help you decide whether a plan from SLWA is right for you.

Please visit www.slwofa.com for frequently asked questions and links to additional information. You can also call SLWA toll-free at 1-844-257-8795 for more information, to sign up for coverage, or to opt out of any future SLWA mailings.

City of Neosho

*Service Line Warranties of America ("SLWA"), an independent company separate from the City of Neosho, offers these optional plans. Your choice of whether to purchase these plans will not affect the price, availability or terms of service from your local utility or community. The City of Neosho and SLWA entered into an agreement to introduce these plans to Neosho homeowners.



Information for Neosho Homeowners



JZS

<<MR. SAMPLE A SAMPLE_XX>>
<<MAIL_ADDRESS1_XXXXXXX>>
<<MAIL_ADDRESS2_XXXXXXX>>
<<MAIL_CITY_XX, ST ZIP>>



Please reply by:
<<Month X, XXXX>>

Dear <<Mr. Sample>>,

Many homeowners are not aware that repairs to the exterior water service or sewer/septic lines that run between your home and the public utility connection are the responsibility of the homeowner.

Water service and sewer/septic lines are subjected to changing soil conditions, ground shifting and corrosion—which may cause a breakdown without warning, leaving you responsible for the cost of repair or replacement. Replacement of these lines can be expensive—costing you thousands of dollars in unforeseen expenses.

The City of Neosho has allowed Service Line Warranties of America (SLWA),* an independent company, to help eligible homeowners be prepared and have the best possible service in the case of such an emergency. So you're invited to enroll in Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage from SLWA. Accept this *optional* coverage and you'll receive as many service calls as you need up to \$8,500 per call for covered water service or well line repairs, and as many service calls as you need up to \$8,500 per call for covered sewer/septic line repairs (30-day wait includes a money-back guarantee for both) and no deductible. You will also have access to a 24/7, 365-day-a-year emergency repair service hotline to schedule a repair. Once you have made your service call, SLWA will take care of your covered repair, dispatching a qualified plumber to your home and paying the bill directly. Peace of mind starting for as little as \$5.25 per month. Your emergency is dealt with and your water service or sewer/septic line is back to normal.

In the event of an emergency, these plans can save you a significant amount of money and the time of finding a plumber, which can be difficult in the best of times. Having these plans also helps eliminate worry, as you can be sure of a professional job completed by local, licensed and insured plumbers. These are the only service line protection programs for homeowners fully supported by the City of Neosho.

Please take the time to read the information on the back of this letter. If you would like to sign up for a plan, simply complete and return the enclosed form or call SLWA toll-free at 1-844-257-8795. We certainly hope that you never have an exterior water service or sewer/septic line emergency, but if you should ever have a problem, you'll be glad you're covered. These programs are managed by SLWA, and no public funds were used for the mailing of this letter.

For fastest processing, please visit www.slwofa.com.

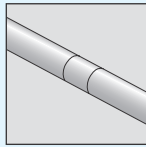
Sincerely,

City of Neosho

*Utility Service Partners Private Label, Inc., known as Service Line Warranties of America ("SLWA"), with corporate offices located at 4000 Town Center Boulevard, Suite 400, Canonsburg, PA 15317, is an *independent company separate from your local utility or community* and offers this optional service plan as an authorized representative of the service contract provider, North American Warranty, Inc., 175 West Jackson Blvd., Chicago, IL 60604. Your choice of whether to purchase this plan will not affect any service you have with your local utility or community. Your local utility or community and SLWA entered into an agreement to introduce these plans. See *eligibility requirements and coverage limitations in this package*.

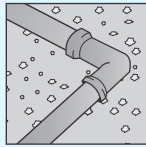
What would you do in an exterior line emergency?

The illustration shows where things may go wrong with your exterior lines and how much a licensed and insured plumber would typically charge customers who don't have coverage. How would you cope if it happened to you? With coverage, it's not something to worry about; you'll have no bill to pay for covered repairs up to the service call benefit amount.



Replace water service line (26–100 ft.)
\$2,832

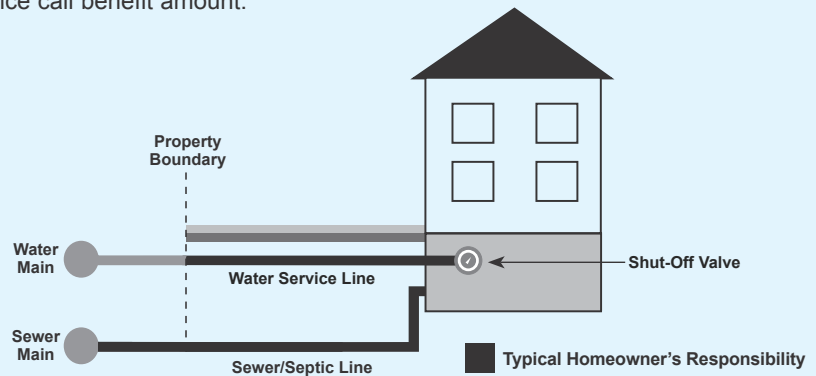
**Plan Members:
No Charge***



Replace sewer/septic line (26–75 ft.)
\$5,754

**Plan Members:
No Charge***

*National average repair costs as of January 2023. No charge for covered repairs up to the service call benefit amount.



The water and sewer/septic lines beyond the property boundary may be an additional responsibility of the homeowner and are included in this coverage. Septic/collection tanks, leaching fields, pumps or grinders are not covered.

Take A Look At The Benefits You'll Receive

	Exterior Water Service Line Coverage	Exterior Sewer/Septic Line Coverage
1. Covered Repairs – Guaranteed for one full year.	✓	✓
2. 24-Hour Emergency Repair Service Hotline – Open 24 hours a day, 365 days a year.	✓	✓
3. Our Promise to You – Simply call SLWA toll-free at 1-844-257-8795 any time, and your coverage can be canceled at your request.	✓	✓

Visit www.slwofa.com to protect your exterior lines or call toll-free 1-844-257-8795

Available: MON-FRI 8AM-8PM | SAT 10AM-4PM EST

Important Questions & Answers

What am I responsible for?

As a homeowner, you are responsible for your exterior water service line and exterior sewer/septic line on your property.

Does my homeowners insurance cover this?

Most basic homeowners insurance policies do not cover repair or replacement due to normal wear and tear of these lines.

Does this coverage include well lines?

Yes, coverage provides for repair or replacement of either water service or well lines, as explained in the "What's Covered" section.

Who is eligible for coverage?

To be eligible, you must own both the residential single structure and the land it is located on. You are not eligible if your home is a recreational vehicle or otherwise intended to be moved; your property is used for commercial purposes; you know of any current problems with your exterior water service or exterior sewer/septic lines before enrollment, your entire line(s) is shared with a 3rd party or covered by a homeowners' association or the like, or your exterior sewer/septic line has failed a smoke or dye test, camera inspection or any other proactive test without resolution. In IA, properties with more than 4 dwelling units are not eligible.

What should I know about this coverage?

What's covered: Coverage provides, up to the applicable benefit limit, to repair or replace the following, that have experienced an operational failure, for which you have sole responsibility, that are damaged due to normal wear and tear, not accident or negligence. **Exterior Water Service Line Coverage:** The water line from your utility's responsibility or external wall of your well casing to the water meter or main shut-off valve inside your home. Repair or replacement of non-functioning stop boxes, shut-off valves, pressure reducing valves and backflow prevention devices is also covered. **Exterior Sewer/Septic Line Coverage:** The sewer line from the external wall of your home up to your utility's responsibility, or septic line from the external wall of your home up to the point of connection to the septic tank on your property, including branch drains from the point they exit the home to the point they re-enter the home.

Not covered: Damage from accidents, negligence or otherwise caused by you, others or unusual circumstances and the following product-specific exclusions: **Exterior Water Service Line Not Covered:** Branch lines; any tanks or appliances. Additional exclusions apply. **Exterior Sewer/Septic Line Not Covered:** Septic/collection tanks; leaching fields; grinder pumps; non-conforming drain lines; or branch lines. Additional exclusions apply. See full Terms and Conditions with complete coverage and exclusion details prior to enrolling by calling 1-844-257-8795 or going to www.slwofa.com. Costs on covered repairs may exceed the benefit limit, in which case you pay the difference between the cost and the benefit limit. Disputes resolved by arbitration, without class action or jury trial, unless otherwise stated in your full Terms and Conditions.

When can I make a service call?

Your plan(s) start the day your enrollment is processed. There is an initial 30-day waiting period before you can make a service call, providing 11 months of coverage during the first year. Upon renewal/reactivation (if applicable), there is no waiting period.

What is the cancellation policy?

Cancel any time by calling SLWA at 1-844-257-8795 or visiting www.slwofa.com. If you cancel either plan within 30 days of your start date, you will get a full refund of the cancelled plan(s) (less claims paid, where applicable). Cancellations after the first 30 days will result in a pro-rata refund of the cancelled plan(s) (less claims paid, where applicable).

What is the term of my service agreement?

The plan is annual. Unless you cancel, your plan automatically renews annually at the then-current renewal price with your same payment terms.

What is E-Z Pay?

E-Z Pay is a paperless and stress-free way to pay for your coverage. Payments are automatically debited from the bank/checking account of your choice as your payment becomes due, at no additional cost.

Who is SLWA?

SLWA is an independent company, separate from your local utility or community. If you would prefer not to receive solicitations from SLWA, please call 1-844-257-8795.

Acceptance Form

Reply ID: Please see below for applicable Reply ID



For fastest processing
scan here.

Please confirm your name and address below and make any changes if necessary.

<<Mr. Sample A. Sample, Serv Address1 xxxxxxxx, Serv Address2 xxxxxxxx, Serv City, ST Zip>>

By providing my e-mail address, I request that I be e-mailed my current and future service agreements and any related documents, and I acknowledge that I can access these documents. I can change my preferences or request paper copies online or by calling SLWA. The phone number and e-mail address provided below are good ways to reach me.

E-mail Address

Phone #

[illegible]

1. Choose Your Protection Plan(s)

**TAKE 10% OFF for the first year
when you select both plans**

	Best Value			
	Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage		Exterior Water Service Line Coverage	Exterior Sewer/Septic Line Coverage
PAYMENT SCHEDULE	Reply ID: <<MC3-MAILCODE-xxxx>> Reply ID: <<MC4-MAILCODE-xxxx>>		Reply ID: <<MC1-MAILCODE-xxxx>>	Reply ID: <<MC2-MAILCODE-xxxx>>
MONTHLY	☐ \$12.50	\$11.24	☐ \$5.25	☐ \$7.25
QUARTERLY	☐ \$37.50	\$33.72	☐ \$15.75	☐ \$21.75
YEARLY	☐ \$150.00	\$134.88	☐ \$63.00	☐ \$87.00

2. Choose Your Payment Method

- ☐
- E-Z Pay**
- (see back of letter)

By signing below, I authorize SLWA to use account information from the enclosed check to make electronic fund transfers to automatically initiate my first and future debits to my bank account at the frequency and amount specified in the Payment Schedule, plus any applicable taxes, in connection with my payments for the plan(s) selected. I understand my check will be converted to an electronic debit for my first payment, instead of deposited as a paper check.

- #### ☐ Credit/Debit Card

By signing below, I authorize SLWA to charge my first and future payments, plus any applicable taxes, for the plan(s) selected to my credit/debit card at the frequency and amount specified in the Payment Schedule.

- ☐ VISA ☐ MASTERCARD ☐ AMEX ☐ DISCOVER

Card Number
 Exp. Date

- ☐
- Annual Check or Money Order**

I have enclosed my check or money order, payable to SLWA, for my annual payment for the plan(s) selected.

Yes, please sign me up for the protection plan(s) from SLWA I have selected. I understand this optional plan(s) is based on an annual contract and will be automatically renewed annually on the same payment terms I selected at the then-current renewal price (currently \$12.50 per month if I select both plans), plus any applicable taxes, unless I cancel. I can cancel this contract(s) any time at no additional cost, without obligation to make future plan payments, by calling 1-844-257-8795 or visiting www.slwofa.com. *Your Data:* See our homepage at www.slwofa.com. I agree I have read the coverage details in this package and confirm I am the homeowner, meet all other eligibility requirements, and understand the coverage limitations and exclusions

Signature (required)

<<customer_no>>



Please Reply by <<Month X, XXXX>>



JZS

<<MR. SAMPLE A SAMPLE_XX>>
<<MAIL_ADDRESS1_XXXXXXXX>>
<<MAIL_ADDRESS2_XXXXXXXX>>
<<MAIL_CITY_XX, ST ZIP>>



Dear <<Mr. Sample>>,

Many homeowners are not aware that repairs to the exterior water service or sewer/septic lines that run between your home and the public utility connection are the responsibility of the homeowner.

Water service and sewer/septic lines are subjected to changing soil conditions, ground shifting and corrosion—which may cause a breakdown without warning, leaving you responsible for the cost of repair or replacement. Replacement of these lines can be expensive—costing you thousands of dollars in unforeseen expenses.

The City of Neosho has allowed Service Line Warranties of America (SLWA),* an independent company, to help eligible homeowners be prepared and have the best possible service in the case of such an emergency. So you're invited to enroll in Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage from SLWA. Accept this *optional* coverage and you'll receive as many service calls as you need up to \$8,500 per call for covered water service or well line repairs, and as many service calls as you need up to \$8,500 per call for covered sewer/septic line repairs (30-day wait includes a money-back guarantee for both) and no deductible. You will also have access to a 24/7, 365-day-a-year emergency repair service hotline to schedule a repair. Once you have made your service call, SLWA will take care of your covered repair, dispatching a qualified plumber to your home and paying the bill directly. Peace of mind starting for as little as \$5.25 per month. Your emergency is dealt with and your water service or sewer/septic line is back to normal.

In the event of an emergency, these plans can save you a significant amount of money and the time of finding a plumber, which can be difficult in the best of times. Having these plans also helps eliminate worry, as you can be sure of a professional job completed by local, licensed and insured plumbers. These are the only service line protection programs for homeowners fully supported by the City of Neosho.

Please take the time to read the information on the back of this letter. If you would like to sign up for a plan, simply complete and return the enclosed form or call SLWA toll-free at 1-844-257-8795. We certainly hope that you never have an exterior water service or sewer/septic line emergency, but if you should ever have a problem, you'll be glad you're covered. These programs are managed by SLWA, and no public funds were used for the mailing of this letter.

For fastest processing, please visit www.slwofa.com.

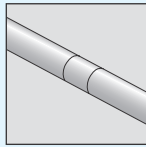
Sincerely,

City of Neosho

*Utility Service Partners Private Label, Inc., known as Service Line Warranties of America ("SLWA"), with corporate offices located at 4000 Town Center Boulevard, Suite 400, Canonsburg, PA 15317, is an *independent company separate from your local utility or community* and offers this optional service plan as an authorized representative of the service contract provider, North American Warranty, Inc., 175 West Jackson Blvd., Chicago, IL 60604. Your choice of whether to purchase this plan will not affect any service you have with your local utility or community. Your local utility or community and SLWA entered into an agreement to introduce these plans. See *eligibility requirements and coverage limitations in this package*.

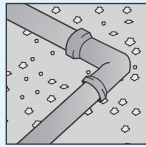
What would you do in an exterior line emergency?

The illustration shows where things may go wrong with your exterior lines and how much a licensed and insured plumber would typically charge customers who don't have coverage. How would you cope if it happened to you? With coverage, it's not something to worry about; you'll have no bill to pay for covered repairs up to the service call benefit amount.



Replace water service line (26–100 ft.)
\$2,832

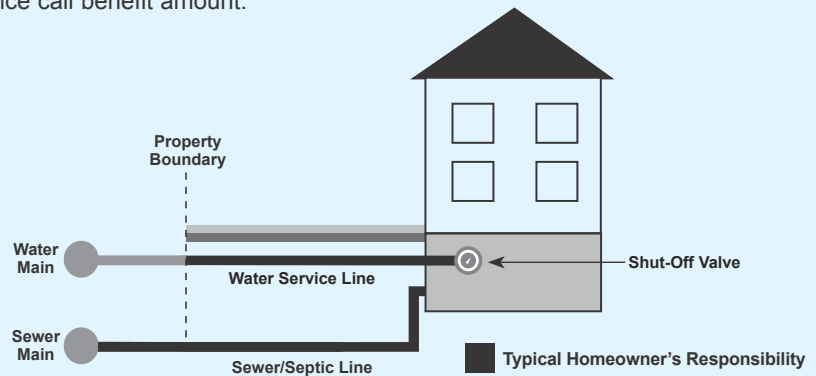
**Plan Members:
No Charge***



Replace sewer/septic line (26–75 ft.)
\$5,754

**Plan Members:
No Charge***

*National average repair costs as of January 2023. No charge for covered repairs up to the service call benefit amount.



The water and sewer/septic lines beyond the property boundary may be an additional responsibility of the homeowner and are included in this coverage. Septic/collection tanks, leaching fields, pumps or grinders are not covered.

Take A Look At The Benefits You'll Receive

- Covered Repairs** – Guaranteed for one full year.
- 24-Hour Emergency Repair Service Hotline** – Open 24 hours a day, 365 days a year.
- Our Promise to You** – Simply call SLWA toll-free at 1-844-257-8795 any time, and your coverage can be canceled at your request.

Exterior Water Service Line Coverage



Exterior Sewer/Septic Line Coverage



Visit www.slwofa.com to protect your exterior lines or call toll-free 1-844-257-8795

Available: MON-FRI 8AM-8PM | SAT 10AM-4PM EST

Important Questions & Answers

What am I responsible for?

As a homeowner, you are responsible for your exterior water service line and exterior sewer/septic line on your property.

Does my homeowners insurance cover this?

Most basic homeowners insurance policies do not cover repair or replacement due to normal wear and tear of these lines.

Does this coverage include well lines?

Yes, coverage provides for repair or replacement of either water service or well lines, as explained in the "What's Covered" section.

Who is eligible for coverage?

To be eligible, you must own both the residential single structure and the land it is located on. You are not eligible if your home is a recreational vehicle or otherwise intended to be moved; your property is used for commercial purposes; you know of any current problems with your exterior water service or exterior sewer/septic lines before enrollment, your entire line(s) is shared with a 3rd party or covered by a homeowners' association or the like, or your exterior sewer/septic line has failed a smoke or dye test, camera inspection or any other proactive test without resolution. In IA, properties with more than 4 dwelling units are not eligible.

What should I know about this coverage?

What's covered: Coverage provides, up to the applicable benefit limit, to repair or replace the following, that have experienced an operational failure, for which you have sole responsibility, that are damaged due to normal wear and tear, not accident or negligence. **Exterior Water Service Line Coverage:** The water line from your utility's responsibility or external wall of your well casing to the water meter or main shut-off valve inside your home. Repair or replacement of non-functioning stop boxes, shut-off valves, pressure reducing valves and backflow prevention devices is also covered. **Exterior Sewer/Septic Line Coverage:** The sewer line from the external wall of your home up to your utility's responsibility, or septic line from the external wall of your home up to the point of connection to the septic tank on your property, including branch drains from the point they exit the home to the point they re-enter the home.

Not covered: Damage from accidents, negligence or otherwise caused by you, others or unusual circumstances and the following product-specific exclusions: **Exterior Water Service Line Not Covered:** Branch lines; any tanks or appliances. Additional exclusions apply. **Exterior Sewer/Septic Line Not Covered:** Septic/collection tanks; leaching fields; grinder pumps; non-conforming drain lines; or branch lines. Additional exclusions apply. See full Terms and Conditions with complete coverage and exclusion details prior to enrolling by calling 1-844-257-8795 or going to www.slwofa.com. Costs on covered repairs may exceed the benefit limit, in which case you pay the difference between the cost and the benefit limit. Disputes resolved by arbitration, without class action or jury trial, unless otherwise stated in your full Terms and Conditions.

When can I make a service call?

Your plan(s) start the day your enrollment is processed. There is an initial 30-day waiting period before you can make a service call, providing 11 months of coverage during the first year. Upon renewal/reactivation (if applicable), there is no waiting period.

What is the cancellation policy?

Cancel any time by calling SLWA at 1-844-257-8795 or visiting www.slwofa.com. If you cancel either plan within 30 days of your start date, you will get a full refund of the cancelled plan(s) (less claims paid, where applicable). Cancellations after the first 30 days will result in a pro-rata refund of the cancelled plan(s) (less claims paid, where applicable).

What is the term of my service agreement?

The plan is annual. Unless you cancel, your plan automatically renews annually at the then-current renewal price with your same payment terms.

What is E-Z Pay?

E-Z Pay is a paperless and stress-free way to pay for your coverage. Payments are automatically debited from the bank/checking account of your choice as your payment becomes due, at no additional cost.

Who is SLWA?

SLWA is an independent company, separate from your local utility or community. If you would prefer not to receive solicitations from SLWA, please call 1-844-257-8795.

Acceptance Form

Reply ID: Please see below for applicable Reply ID



For fastest processing
scan here.

Please confirm your name and address below and make any changes if necessary.

<<Mr. Sample A. Sample, Serv_Address1_XXXXXXX, Serv_Address2_XXXXXXX, Serv_City, ST Zip>>

By providing my e-mail address, I request that I be e-mailed my current and future service agreements and any related documents, and I acknowledge that I can access these documents. I can change my preferences or request paper copies online or by calling SLWA. The phone number and e-mail address provided below are good ways to reach me.

E-mail Address _____

Phone #



1. Choose Your Protection Plan(s)

**TAKE 10% OFF for the first year
when you select both plans**

	Best Value			
	Exterior Water Service Line Coverage and Exterior Sewer/Septic Line Coverage		Exterior Water Service Line Coverage	Exterior Sewer/Septic Line Coverage
PAYMENT SCHEDULE	Reply ID: <<MC3-MAILCODE-xxxx>> Reply ID: <<MC4-MAILCODE-xxxx>>		Reply ID: <<MC1-MAILCODE-xxxx>>	Reply ID: <<MC2-MAILCODE-xxxx>>
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YEARLY	☐ \$150.00	\$134.88	☐ \$63.00	☐ \$87.00

2. Choose Your Payment Method

☐ **E-Z Pay** (see back of letter)

By signing below, I authorize SLWA to use account information from the enclosed check to make electronic fund transfers to automatically initiate my first and future debits to my bank account at the frequency and amount specified in the Payment Schedule, plus any applicable taxes, in connection with my payments for the plan(s) selected. I understand my check will be converted to an electronic debit for my first payment, instead of deposited as a paper check.

☐ Credit/Debit Card

By signing below, I authorize SLWA to charge my first and future payments, plus any applicable taxes, for the plan(s) selected to my credit/debit card at the frequency and amount specified in the Payment Schedule.

☐ VISA ☐ MASTERCARD ☐ AMEX ☐ DISCOVER

Card Number Exp. Date

☐ **Annual Check or Money Order**

I have enclosed my check or money order, payable to SLWA, for my annual payment for the plan(s) selected.

Yes, please sign me up for the protection plan(s) from SLWA I have selected. I understand this optional plan(s) is based on an annual contract and will be automatically renewed annually on the same payment terms I selected at the then-current renewal price (currently \$12.50 per month if I select both plans), plus any applicable taxes, unless I cancel. I can cancel this contract(s) any time at no additional cost, without obligation to make future plan payments, by calling 1-844-257-8795 or visiting www.slwofa.com. *Your Data:* See our homepage at www.slwofa.com. I agree I have read the coverage details in this package and confirm I am the homeowner, meet all other eligibility requirements, and understand the coverage limitations and exclusions

Signature (required)

<<customer no>>

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Region M Grant Application

ORIGINATING DEPARTMENT: Public Works Department

ATTACHMENT:

1. FY2025 Region M Grant Application
 2. Nate Resume
 3. Jeff Barratt
-

PURPOSE:

To seek grant monies that would benefit the City of Neosho Regional Recycling Center.

BACKGROUND:

Region M is a solid waste management district that covers the counties of Newton, McDonald, Vernon, Barton, and Jasper. Annual grant funding is based on allocation to the district by the DNR-SWMP (Solid Waste Management Program).

Use of grant monies (if approved by Region M) can go towards salaries and fringe benefits for two staff members.

FTE Salary total	\$61,200.00
FTE Fringe total	\$20,907.00
 Total	 \$82,107.00

RECOMMENDATION:

City Staff recommends that the council authorize the Mayor to sign application documents.



Region M Waste Management District

1801 W 32nd Street, Suite C.212 – Joplin, MO 64804

Phone: 417-317-5021 | Web: www.RegionM.org

FY2025 Grant Application - Entity / Contact Information

Name of Business or Organization	City of Neosho
Name of Project	Neosho Regional Recycling Center
Project Manager	Nate Siler
Project Manager Title	City of Neosho Public Works Director
Mailing Address	200 Nelson Ave Neosho, MO 64850
Telephone	417-451-8071
Email	nsiler@neoshomo.gov
Website	https://www.neoshomo.gov/271/Recycle-Center
Other Authorized Official	Jeff Barratt
Title	City of Neosho Assistant Public Works Director
Telephone	417-451-8071
Email	jbarratt@neoshomo.gov
MO Vendor # and Federal Tax ID #	44-6600030
Location of Project <i>If different than mailing address.</i>	4700 Howard Bush Drive, Neosho, MO 64850
Type of Applicant <i>Place an X in your response.</i>	☐ Individual ☒ City/County ☐ Public Entity or Institution ☐ School ☐ For-Profit Business _____ # of years in Business ☐ Non-Profit Organization ☐ Other (Describe)



Region M Waste Management District

1801 W 32nd Street, Suite C.212 – Joplin, MO 64804

Phone: 417-317-5021 | Web: www.RegionM.org

FY2025 Grant Application - Project Information

Project Description	The Neosho Regional Recycling Center located at 4700 Howard Bush Dr., Neosho, MO in Newton County serves all of Neosho, McDonald County, Newton County and a number of surrounding Cities and businesses . The City of Neosho Public Works Dept oversees the operation, while a lead attendant oversees daily duties, customer service, and two other full time employees.
Amount of Funding Requested	\$82,107.00
Partial Funding – <i>Place an X in your response.</i>	X _____ Able to accept partial funding for project to be completed _____ Not able to accept partial funding for project. (Without full funding, the project will not be able to be completed)
Estimated Total Tonnage to be Diverted During Project	700
Types of Materials to be Diverted During Project	Cardboard, newspaper, mixed paper, plastic, books, magazines, e-waste, scrap metal, styrofoam, batteries, clothing, and glass.
Cities/Counties to be Served or Districtwide/Statewide	Neosho, Granby, Goodman, Pineville, Seneca, Anderson, Newton County, and McDonald County.
Qualifications of Key Personnel	Include resumes of Project Manager and other staff who will be directly involved with this project along with this application.

Previous Funding - Has your organization received funding from Region M, EIARA, or other Solid Waste Districts in the past five years? If yes, please list the grant awarded, grant/project number, amount of grant award.

Year	Project Number	Project Name / Description of Funding	Amount Awarded
FY2024	M2024-003	Neosho Regional Recycling Center	\$71,490.51
FY2023	M2023-007	Neosho Regional Recycling Center	\$57,004.00
FY2022	M2022-006	Neosho Regional Recycling Center	\$57,004.00
FY2021	M2021-008	Neosho Regional Recycling Center	\$62,400.83
FY2020	M2020-006	Neosho Regional Recycling Center	\$51,063.26
FY2019	M2019-006	Neosho Regional Recycling Center	\$49,733.00
FY2018	M2018-007	Neosho Regional Recycling Center	\$49,463.00
FY2017	M2017-009	Neosho Regional Recycling Center	\$35,209.00



FY2025 Grant Application – Executive Summary Page 1 of 8

Project Effectiveness and Efficiency

Describe the degree to which the project promotes waste reduction or recycling, or results in an environmental benefit to solid waste management throughout the proposed process.

Promotion of Waste Reduction or Recycling:

The Neosho Regional Recycling Center serves as a pivotal hub for promoting waste reduction and recycling in the region, catering to over 7,000 individual recyclers and collaborating with six other communities in Newton/McDonald County. The Center significantly promotes waste reduction and recycling through its comprehensive services. The center operates as a drop-off point, making recycling accessible to a diverse range of individuals and organizations. By providing a convenient location for recycling, the center actively encourages residents and businesses to divert materials from landfills, contributing to a reduction in overall waste.

Describe how the project relates to the conformance with the integrated waste management hierarchy as described in the Missouri Policy on Resource Recovery.

Conformance with the Integrated Waste Management Hierarchy:

The Neosho Recycle Center aligns closely with the integrated waste management hierarchy outlined in the Missouri Policy on Resource Recovery. The center prioritizes source reduction and reuse by offering educational programs that emphasize the importance of reducing waste at its source. Recycling is promoted as a preferred waste management option, fostering community engagement and participation. The center actively avoids landfill disposal and incineration, thereby adhering to the state's waste management guidelines. Seventeen of the nineteen items on the targeted list from the Missouri policy are accepted at the center. The center also utilizes a Facebook page to aid in education of waste reduction.



FY2025 Grant Application – Executive Summary Page 2 of 8

Project Effectiveness and Efficiency *Continued*

Clearly explain the project goals and how they are achievable.

Project Goals:

Our project goals at the Neosho Regional Recycling Center are multi-faceted. Firstly, we aim to sustain and expand operations at our facility to enhance recycling awareness across our two-county area, encompassing Newton and McDonald County. Secondly, we are committed to facilitating the processing of recyclable commodities to minimize landfill usage, thereby providing a valuable resource to the regions we serve.

Currently, we accept a wide range of recyclable items, including but not limited to: Aluminum/tin cans, Batteries, Plastic bottles (#1 PET, commonly found in pop bottles), Newspapers, Magazines, Mixed paper, Office paper, Phone books, Hardback books, Cardboard, Pasteboard (e.g., cereal boxes), Milk jugs and detergent bottles (#2 HDPE), Ink cartridges, Plastic grocery bags, Most scrap metals, Styrofoam, Light bulbs, Vegetative debris, Glass, and Cooking grease

By offering a diverse array of accepted materials, we strive to encourage and facilitate widespread participation in recycling efforts, contributing to a more sustainable and environmentally-conscious community.

Explain how the amount of funding requested is reasonable in relation to the amount of and type of material to be diverted.

Reasonable request for the amount to be diverted:

The Neosho Recycling Center is requesting grant funding of \$82,107.00 for two full-time employees' wages and fringe benefits. This funding is crucial to support the center's operations, achieve recycling goals, and effectively serve the community, given the estimated recycling volume of 700 tons and the need for dedicated staff for efficient operations and community impact.

Describe what other costs (if any), outside of this funding request, are expected; and how those will be covered.

Other Costs:

The Neosho Regional Recycling Center operates within a total operating budget of \$165,798, excluding any capital improvements. The amount requested for funding is less than half of this budget, with the taxpayers of the City of Neosho covering the remaining portion.



FY2025 Grant Application – Executive Summary Page 3 of 8

Organizational Capacity

Performance Rating

If previous grantee – Describe your past performance including timeliness of quarterly reporting, financial management, and technical ability to complete the tasks as anticipated.

If new applicant – Attach at least one letter of recommendation describing your capability to carry out the proposed project.

As the proud recipient of the Region M grant for many years, our organization has consistently upheld high standards of performance and accountability. We have a proven track record of meeting quarterly reporting deadlines, consistently submitting reports on time or even ahead of schedule.

Our financial management practices are guided by Missouri statutes, ensuring strict adherence to regulations governing purchasing, budgeting, transparency, accountability, and financial responsibility. We prioritize fiscal integrity and transparency in all our financial dealings, maintaining sound practices that align with regulatory requirements.

In summary, our organization's commitment is evident in our consistent performance in meeting reporting deadlines, adherence to financial regulations, and demonstration of technical proficiency. Our track record of reliability, and adherence to policy positions us as a dependable partner.

Objectives and Diversion Goals

If previous grantee – Describe how previous tonnage diversion goals and objectives were achieved or exceeded; or what struggles kept you from meeting the target goal and objectives.

If new applicant – Attach at least one letter of support from an organization or individual who will be participating this the project.

Anticipated Goals:

The Neosho Regional Recycling Center has consistently met or exceeded its diversion goals each year. Recent investments in additional equipment, including a new horizontal baler, vertical baler, and commercial paper shredder, have significantly enhanced our efficiency and expanded our capabilities to process a wider range of materials. As a result, we anticipate surpassing our previous year's goal by 260 tons, representing an increase of nearly 60 percent. These advancements underscore our commitment to sustainability and our dedication to continually improving our operations to better serve our community and achieve our recycling goals and objectives.



FY2025 Grant Application – Executive Summary Page 4 of 8

Organizational Capacity *Continued*

Describe the managerial, operational, and/or technical capabilities of key project personnel (resumes may be attached).

Personnel:

At the Neosho Regional Recycling Center, we currently employ three full-time staff members whose combined experience at the center totals 13 years. Under the leadership of our recycling center manager, our team has made significant progress in securing top-quality vendors and implementing efficient organizational practices for processing materials. As we seek funding for salary and fringe benefits for our staff, it's important to highlight that our dedicated team is the cornerstone of our center's success. Their expertise, professionalism, and commitment to excellence set us apart and enable us to provide exceptional service to our community. We take pride in the positive feedback we receive about our staff, and we are grateful for their continued dedication and the consistent retention of our team members over the years.

Describe the evaluation procedures that will be used to qualitatively measure the success of the project.

Evaluation procedures:

The Neosho Regional Recycling Center meticulously tracks the recyclable materials processed through our facility by maintaining detailed records of weight and type. Currently, we track 19 different recyclable commodities with the purpose of securing sales for each item. While some commodities may not be profitable, we diligently monitor and manage the quantities of each. Once a particular type of recyclable material has reached a total weight needed for shipment, we proactively seek out the best price from our list of vendors, ensuring efficient and cost-effective sales transactions.

In addition to tracking recyclable materials, the Neosho Regional Recycling Center has implemented a system to track individual customers and organizations. This allows us to accurately monitor the flow of customers and understand the extent of outreach our facility is reaching. By maintaining records of customer interactions and engagement, we gain valuable insights into our community's utilization of the recycling center and can tailor outreach efforts accordingly. This proactive approach enables us to better serve our community and optimize our outreach initiatives to maximize impact.



FY2025 Grant Application – Executive Summary Page 5 of 8

Long Term Effect

Describe how this project is designed to stand alone at some point after completion, even without support of the District.

Sustainability:

The Neosho Regional Recycling Center greatly values its partnership with the Region M District, as it provides a valuable resource to area communities and surrounding counties. This partnership is vital for the continued operation of the center, especially considering the significant costs associated with overhead and maintenance. While the center generates revenue through sales of commodities, this revenue covers only a fraction of the operating budget. Therefore, the support from the Region M District is essential to ensure the center's sustainability and ability to serve the local area effectively. We are committed to continuing this partnership for years to come, as it is crucial for the success and longevity of the Neosho Regional Recycling Center.

Describe how this project will focus on an unmet need. Examples – low service provider area, new targeted clientele, new targeted items, landfill banned items, hard to recycle items, etc.

Expansion:

The Neosho Regional Recycling Center is committed to expanding the range of accepted recyclable materials to better serve our community. We have recently taken a significant step forward by submitting a grant application to initiate a food waste program. If approved, this grant will provide essential equipment and receptacles to address this unmet need in our area. Additionally, implementing this program will support the expansion of our composting area, which is offered to the public at no cost. This initiative aligns with our mission to promote environmental sustainability and provide valuable resources to our community.

Describe the continued availability of feedstock or materials to be recycled; how you have secured adequate sources to recover the anticipated volume of materials.

Securing recyclable materials:

In recent years, the Neosho Regional Recycling Center has implemented innovative strategies to expand recycling accessibility within our community. We've utilized recycling trailers to establish remote recycling stations at local businesses and area schools, fostering convenience and participation in recycling efforts. Additionally, we've developed strong relationships with numerous local companies, who regularly bring their recyclables to our center. These collaborative initiatives are crucial in diverting recyclable materials from local landfills, promoting sustainability, and preserving our environment for future generations.



FY2025 Grant Application – Executive Summary Page 6 of 8

Community Impact

Describe the degree to which the project contributes to community-based economic development.

Community contribution:

The Neosho Regional Recycling Center serves as a cornerstone for our community's environmental efforts. By promoting recycling and waste reduction, we aim to not only preserve our natural resources but also stimulate economic development through job creation, education, and the establishment of a healthy economy. Implement educational programs to raise awareness about the importance of recycling, waste reduction, and the environmental and economic benefits associated with these practices.

Property value in a community can be positively impacted by recycling efforts. The annual cleanup day provided free of charge by the City of Neosho for the community is a prime example of how recycling centers contribute to this outcome. While the event is partnered with a trash service, the Neosho Regional Recycling Center plays a crucial role in promoting and identifying recyclable materials. By actively participating in this cleanup day and encouraging recycling alongside waste disposal, the center contributes to keeping the community clean and attractive. This proactive approach to waste management and recycling not only enhances the overall cleanliness of the area but also positively influences the perception of the community, potentially leading to increased property values over time.

Describe the transferability of results; the extent to which the success of this project may be applied elsewhere in the District.

Organizational impact:

The Neosho Regional Recycling Center is committed to leading the Region M district by implementing efficient recycling practices and expanding our recycling programs. We aim to break previous tonnage diversion records through strategic partnerships, innovative technologies, community engagement, and continuous improvement efforts. These efforts and practices will help surrounding area centers in their programs as well.



FY2025 Grant Application – Executive Summary Page 7 of 8

Community Impact *Continued*

Describe the educational impact within the community.

Educational Impact and Community Cooperation:

The Neosho Regional Recycling Center will assess its educational impact by monitoring increased participation in recycling programs and enhanced recycling knowledge within the community, achieved through the center's social media outreach. Collaborative efforts with other organizations will be demonstrated through joint initiatives and the sharing of resources.

Describe cooperative efforts to work with or partner with other organizations in the District.

Cooperative efforts within the District:

The Neosho Regional Recycling Center has established partnerships with McDonald County, the City of Granby, and the City of Seneca recycling programs. Every Thursday, the center exclusively serves these communities to assist in processing the recyclables they have collected. This collaborative effort has proven beneficial for all parties involved, contributing to the success of the Neosho Regional Recycling Center and supporting sustainable waste management practices in the region.



FY2025 Grant Application – Executive Summary Page 8 of 8

Summarize other procedures/strategies, activities, qualifications, or anticipated outcomes you feel would be relevant and beneficial for the Region M Board and Review Committee to consider when evaluating the proposed project.

Conclusion Summary:

This grant will support the Neosho Regional Recycling Center in achieving its goals of education and social regional outreach, contributing to a more sustainable and environmentally conscious community. The outlined strategies, activities, and expected outcomes demonstrate the feasibility and impact of the proposed project, aligning with the center's commitment to waste reduction and recycling promotion.

With Region M's continued partnership with the Neosho Regional Recycling Center, we are committed to maintaining and enhancing our services to the community. With the support of Region M, the center will be able to process the following items:

Aluminum/tin cans
Batteries
Plastic bottles (#1 PET, commonly found in pop bottles)
Newspapers
Magazines
Mixed paper
Office paper
Phone books
Hardback books
Cardboard
Pasteboard (e.g., cereal boxes)
Milk jugs and detergent bottles (#2 HDPE)
Ink cartridges
Plastic grocery bags
Most scrap metals
Styrofoam
Light bulbs
Vegetative debris
Glass
Cooking grease

This collaboration ensures that the Neosho Regional Recycling Center can continue to provide comprehensive recycling services, contributing to environmental sustainability and waste reduction efforts in our community.



Region M Waste Management District

1801 W 32nd Street, Suite C.212 – Joplin, MO 64804

Phone: 417-317-5021 | Web: www.RegionM.org

FY2025 Grant Application – Budget Document

Line Item	Category	Qty	Price	Total
FTE Salary	Wages	1	\$61,200.00	\$61,200.00
FTE Fringe	Fringes	1	\$20,907.00	\$20,907.00
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
	Wages			
Total Budget (Should Match Total Funding Requested)				\$ 82,107.00

Attach quotes or sources of reasonable pricing along with this application. Quotes are required for line items \$1,000.00 or more.



FY2025 Grant Application - Timetable/Work Plan

List tasks involved (Example: request bids, place equipment, community survey, etc.).

Task #1 Sign Financial Agreement

Task #2 Collection & Processing of Commodities

Task #3 Monitor Material Stream

Task #4 Quarterly reporting

Task #5 Monitor Staffing & Payroll

Task #6 Monitor E-Waste Disposal

Task #7 Evaluate Project Impact

Task #8 Community Outreach and Education

Place a X in the timetable cells showing when tasks would be active and completed.

Month:	Jul 2024	Aug 2024	Sept 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025	Jul 2025
Task #1	X												
Task #2	X	X	X	X	X	X	X	X	X	X	X	X	X
Task #3	X	X	X	X	X	X	X	X	X	X	X	X	X
Task #4			X			X			X			X	
Task #5	X	X	X	X	X	X	X	X	X	X	X	X	X
Task #6	X	X	X	X	X	X	X	X	X	X	X	X	X
Task #7		X		X		X		X		X		X	
Task #8	X	X	X	X	X	X	X	X	X	X	X	X	X
Task #9 Request Reimbursements		X	X	X	X	X	X	X	X	X	X	X	X
Task #10 Submit Quarterly & Final Reports				X			X			X			X



FY2025 Grant Application - Signature Page

Project Reporting Requirements:

If approved for funding as a FY2025 Region M Grantee, we subsequently agree to furnish Waste Diversion, Waste Reduction, Quarterly Reports, and/or any other information relevant to the project objective for the length of the project or other dates as specified by Region M Waste Management District Board of Directors and/or staff.

Region M FY2025 Grant Cycle – 5 Year Reporting Requirement:

The Grantee hereby agrees that any equipment purchased pursuant to this agreement shall be used for the performance of services under the agreement during the term of this agreement, and for four years thereafter. The Grantee shall annually submit a statement as provided by the District certifying the use(s) of said equipment is for project activities.

Project Income:

We agree that if there is any project income, it is to be reinvested in the project.

Security Interest Agreement:

The Grantee will grant to Region M and/or its successors a security interest in all equipment purchased by the Region M Grantee for \$5,000 or more, in whole or in part, with grant funds received from Region M. Region M staff will file UCC-1 with the state of Missouri.

The security interest in equipment owned by the Region M Grantee shall be equivalent to the amount of funding provided by Region M for the purchase of the equipment.

Unless the MDNR Waste Management Program or Region M notifies the Grantee in writing of a material breach of the FAA or any documents incorporated herewith, the Region M security interest in the equipment shall remain in effect for a period of five years, beginning one year from the date of purchase shown on the equipment purchase invoice. For this five-year period, the Region M security interest shall remain 100% of the amount of funding provided by Region M for the purchase of equipment.

This replaces Missouri Department of Natural Resources Solid Waste Management Program General Terms & Conditions Section 1.M.3.b.ii. Refer to the Department of Natural Resources' (DNR) Waste Management Program (WMP) General Terms and Conditions (G.T. & C.) sections 1.M.3. and 1.N.3. for security interest details.

I (We) hereby certify that the information provided in this FY2025 Grant Application is true and correct. We agree to the 5-Year Reporting Requirement and the Security Interest Agreement.

Signature of Authorized Official

Date

Printed Name

NATE SILER

PROFESSIONAL SUMMARY

Public Works Director for a local municipality, with years of experience leading teams, in multiple departments, through various projects to serve a community.

CORE SKILLS:

- Team Leadership
- Project Management
- Team Building
- Heavy Equipment Training
- Budgeting & Planning

EMPLOYMENT BACKGROUND

Public Works Director

City of Neosho | October 2018 - Present

- Prepares annual budgets for 6 divisions within Public Works
- Oversees all personnel hiring, interviewing, and discipline within the department
- Prepares bid documents for all projects
- Prepares bi-monthly reports for City Manager and City Council
- Reports at bi-monthly City Council Meetings on Department projects
- Handles Public Relations for departments
- Oversees grant application & reporting for Region M Recycling Center

Asst. Public Works Director

City of Neosho | February 2018 - October 2018

- Assisted Public Works Director in everyday operations for streets, water, drainage & fleet
- Oversaw bid document specifications and review for large projects

Drainage Supervisor

City of Neosho | May 2007 - February 2018

- Began in the role of Streets Laborer and was recognized for hard work. Was moved to the construction side installing water and sewer mains.
- Less than 1 year later, promoted to full-time backhoe operator within the streets department. Moved to water distribution maintenance.
- One year later, the drainage department was created and promoted to drainage foreman. Advanced the department from 1 full-time employee to 2 full-time employees, with new equipment. Involved in: bidding procedures, budgeting, retention pond maintenance, chemical weed maintenance, mosquito spray research for safer residential alternatives, DNR programs, interviewing, and hiring. Instrumental in developing residential leaf pick-up routes, mowing routes, city right-away routes, and sweeper routes.
- Extensive knowledge of concrete, trucks, track hoe, loader, backhoe, wood chipper, commercial mowers, brush hogs, boom axe, and sweepers.

Upholstery Line Team

La-Z-Boy Midwest | 1999 - 2007

- Created an inner sense of the importance of maximizing time and efficiency.
- Worked with team to increase production levels and was recognized multiple times within company

ACADEMIC EDUCATION

East Newton High School

Graduated 1998

CERTIFICATIONS

- *DSIII Water Certification from MODNR*
- *Class A CDL*
- *Multiple safety & workzone certifications*

CONTACT INFO:

Mobile: (417) 592.0055
Email: nsiler@neoshomo.org or
Drainage2116@gmail.com

Address: 7714 Heron Dr., Neosho, MO 64850

PROFESSIONAL REFERENCES AVAILABLE UPON REQUEST

JEFF BARRATT JR.

ASSISTANT PUBLIC WORKS DIRECTOR



417-389-2409



jbarratt@neoshomo.org



10639 Reindeer Dr., Granby, MO

About Me

I have been serving the City of Neosho since 1999 and pride myself on my servant mentality. My strengths include being able to lead from a relational perspective that makes people want to follow me, I notice details, am a proficient machine operator and have a desire to make this community better through my service.

Experience

City of Neosho 2020 - Current

Assistant Director Public Works

This role has allowed me to take a very hands-on approach to the Public Works Department. Responsibilities include inventory control, project scheduling, tracking of work orders, material bids, large project contracting, and employee relations.

For the past several years, the Recycling Center has fallen under my leadership. Since beginning the oversight, we have increased production by at least 30% and negotiated larger sale with wholesale buyers.

City of Neosho 2018 - 2020

Streets Superintendent Public Works

Rejoining the City of Neosho team in 2018, allowed me to have direct supervision over the drainage and street departments. I oversaw day-to-day projects and employee workloads.

Missouri American Water 2012 - 2018

Water Distribution Maintenance Laborer

Worked to maintain the service lines and meters for the residents in the City of Joplin. Provided repairs for water main breaks, service line repair and replacement, and excavation of areas as needed.

City of Neosho 1999 - 2012

Shortly after graduating high school, I joined the public works department as a streets laborer. Over the years, as I learned more and my experience has increased, I have moved my way up to Operator and Street Foreman. These roles gave me leadership experience over smaller crews of workers & projects. I am very knowledgeable of how the water system of Neosho works.

Education & Certifications

- East Newton High School Graduate, Class of 1998
- DS3 Water Certification, Missouri Department of Natural Resources
- CPR Certified
- Class A CDL
- OSHA 10 Certified
- Multiple safety & workzone certifications

REQUESTED COUNCIL MEETING DATE: February 6, 2024

ITEM: Request to Waive Section for Vendor Event

ORIGINATING DEPARTMENT: City Clerk

ATTACHMENT: None

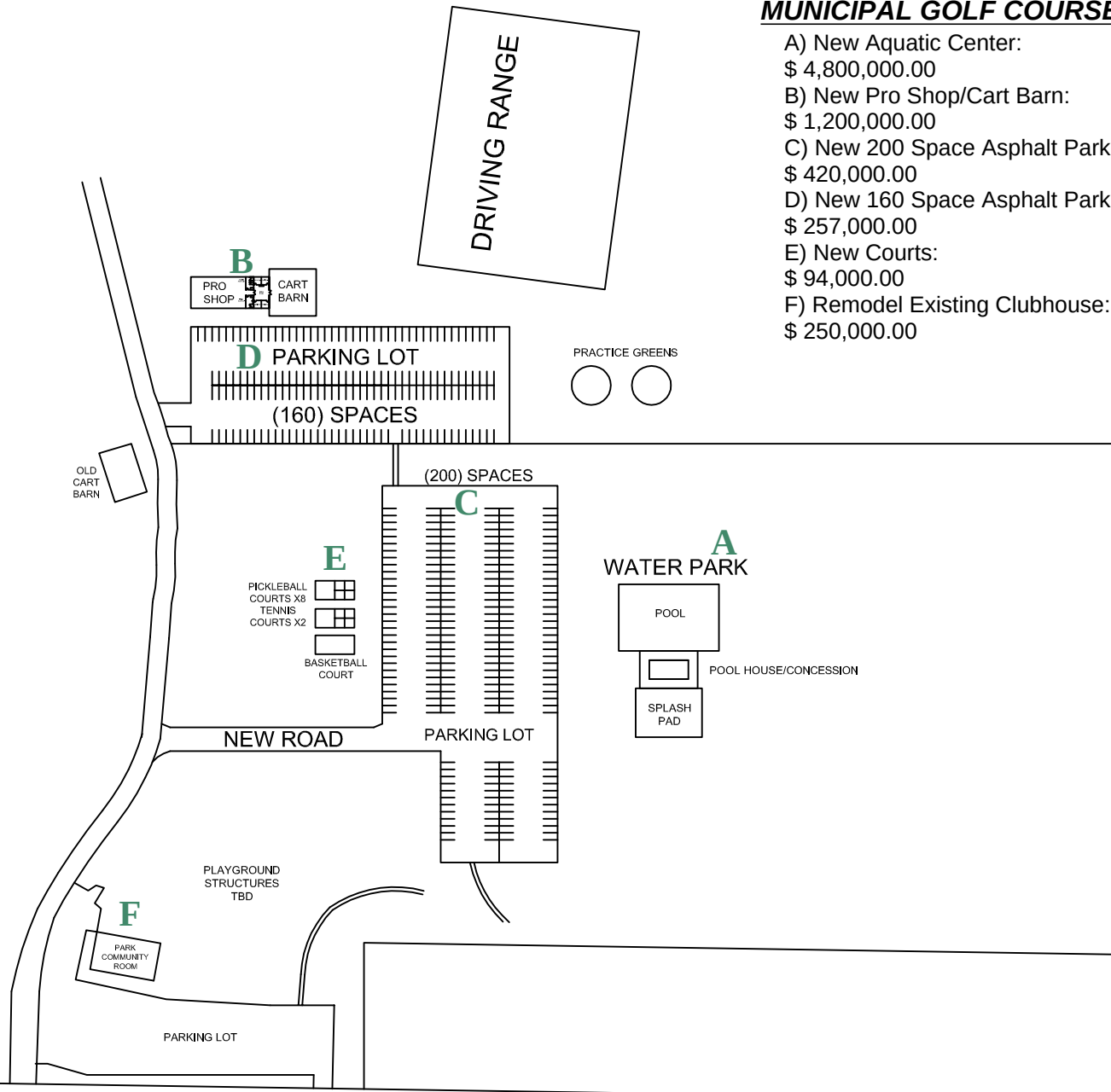
PURPOSE:

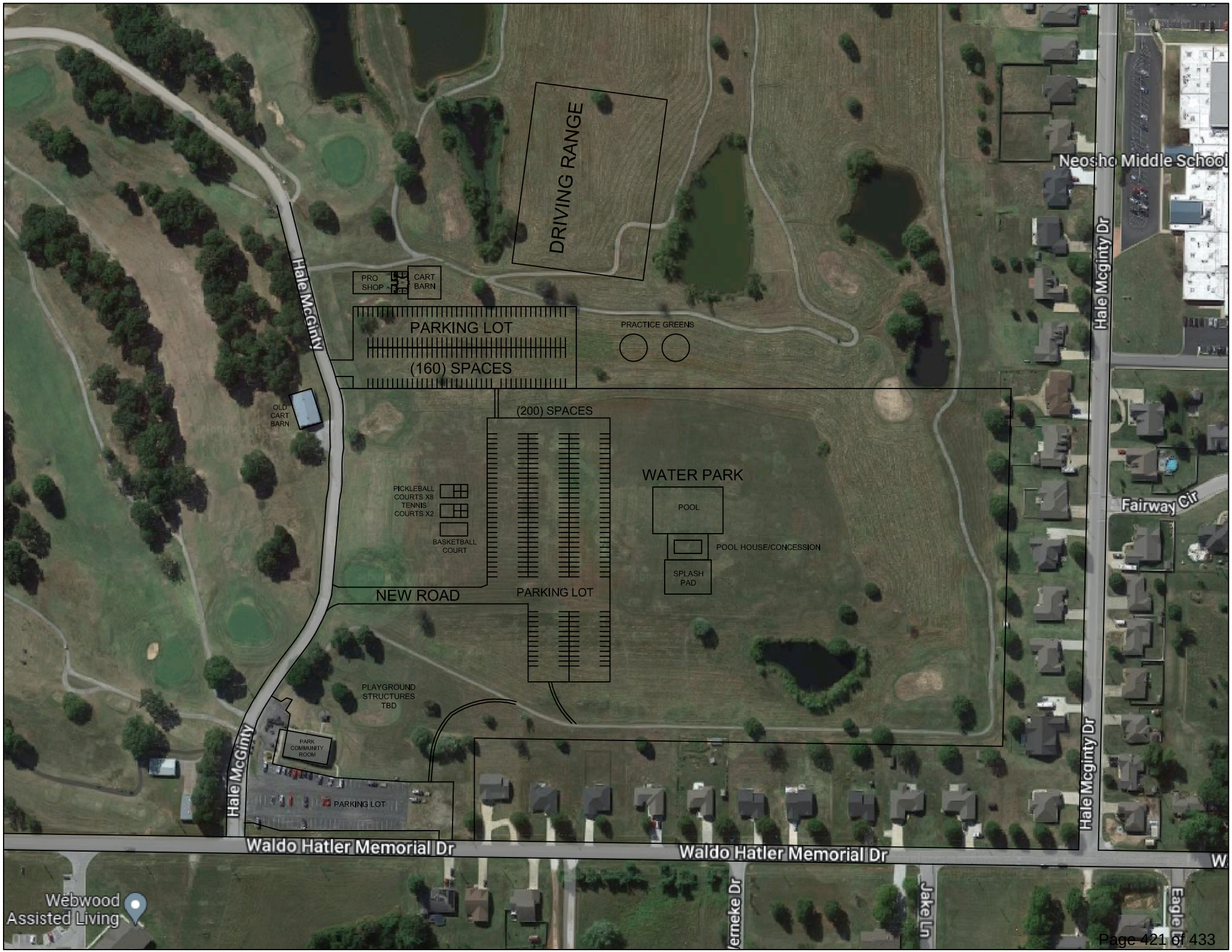
BACKGROUND:

RECOMMENDATION:

**PROPOSED NEW PARK AND
AMMENITIES AT NEOSHO
MUNICIPAL GOLF COURSE**

- A) New Aquatic Center:
\$ 4,800,000.00
- B) New Pro Shop/Cart Barn:
\$ 1,200,000.00
- C) New 200 Space Asphalt Parking Lot:
\$ 420,000.00
- D) New 160 Space Asphalt Parking Lot:
\$ 257,000.00
- E) New Courts:
\$ 94,000.00
- F) Remodel Existing Clubhouse:
\$ 250,000.00





DRIVING RANGE

PRO SHOP
CART BARN

PARKING LOT
(160) SPACES

PRACTICE GREENS



OLD CART BARN

PICKLEBALL
COURTS X8
TENNIS
COURTS X2
BASKETBALL
COURT

(200) SPACES

WATER PARK

POOL

POOL HOUSE/CONCESSION

SPLASH
PAD

NEW ROAD

PARKING LOT

PLAYGROUND
STRUCTURES
TBD

PARK
COMMUNITY
ROOM

PARKING LOT

Neosho Middle School

Hale McGinty Dr

Fairway Cir

Hale McGinty Dr

Waldo Hatler Memorial Dr

Waldo Hatler Memorial Dr

W

Webwood
Assisted Living

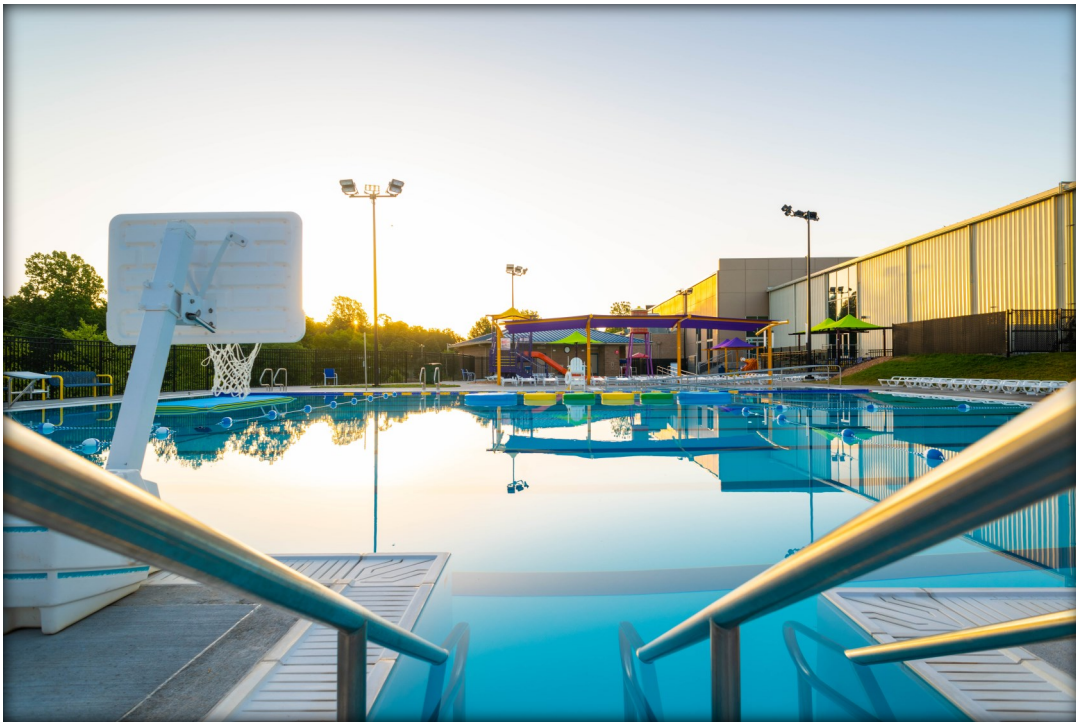
Leemeke Dr

Jake Ln

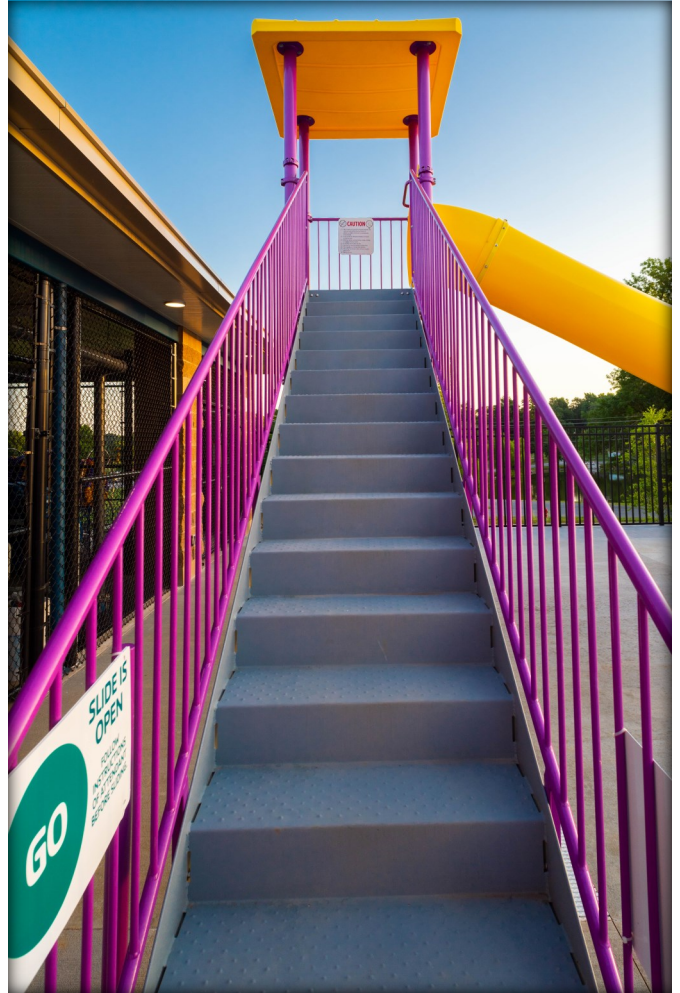
Eagle Ln



RE Smith
Construction Company



RE Smith
Construction Company



RE Smith
Construction Company



RE Smith
Construction Company



RE Smith
Construction Company



RE Smith
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RE Smith
Construction Company



RE Smith
Construction Company



RE Smith
Construction Company



RE Smith
Construction Company

Balls Kenny

From: Kenneth Balls <kennethballs@icloud.com>
Sent: Tuesday, January 30, 2024 6:39 AM
To: Balls Kenny
Subject: Pictures

External email use caution with links & attachments.



Sent from my iPhone