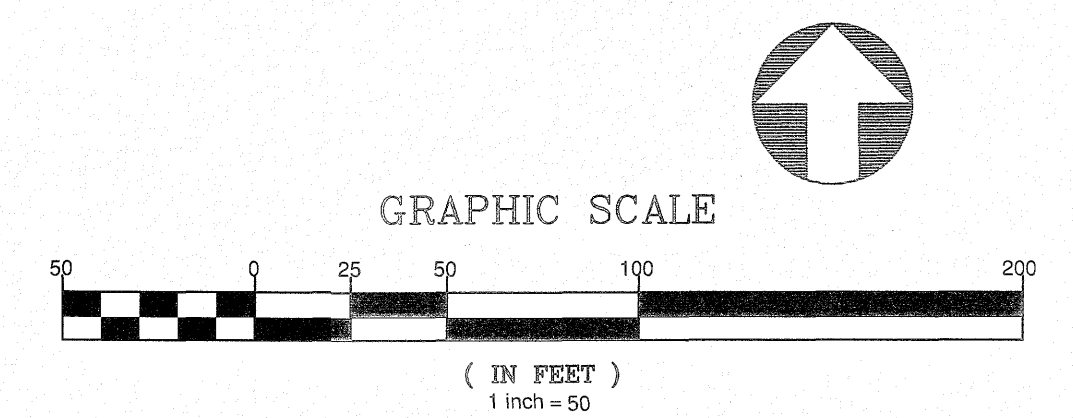


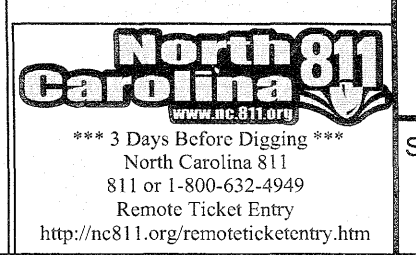
UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIVERIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT

NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLECE, III AND ASSOCIATES, P.A.

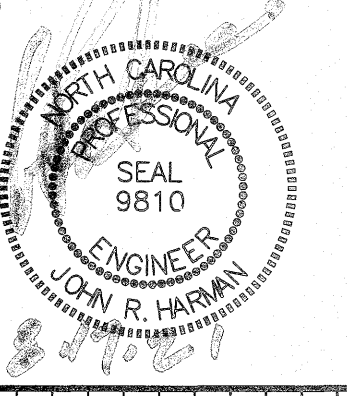
**SITE PERMITTING APPROVAL**  
 Water and Sewer Permits (if applicable)  
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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION  
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 City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_



**AMERICAN Engineering**  
 American Engineering Associates, Southeast, P.A.  
 4020 Westchase Boulevard, Suite 450  
 Raleigh, NC 27607



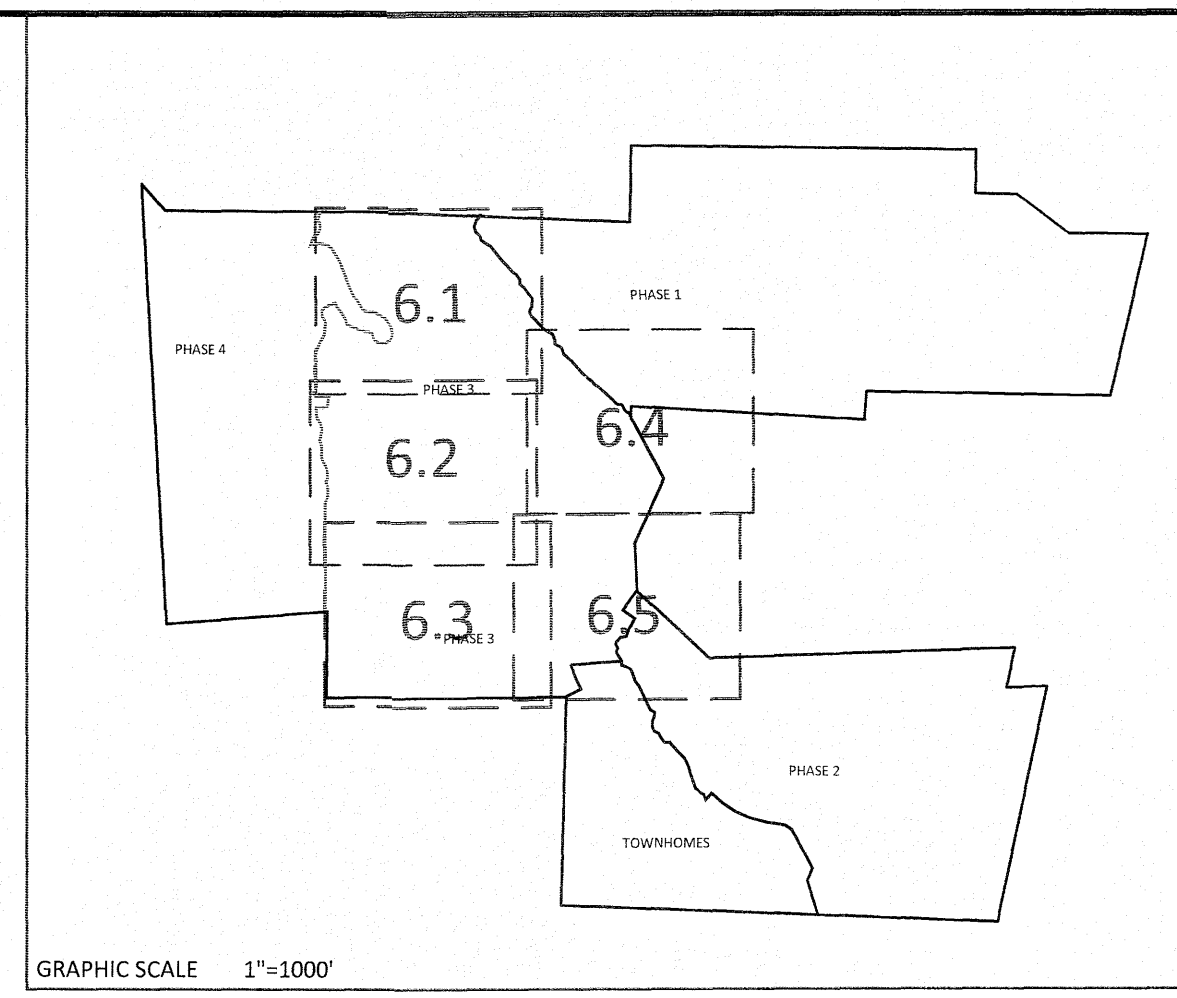
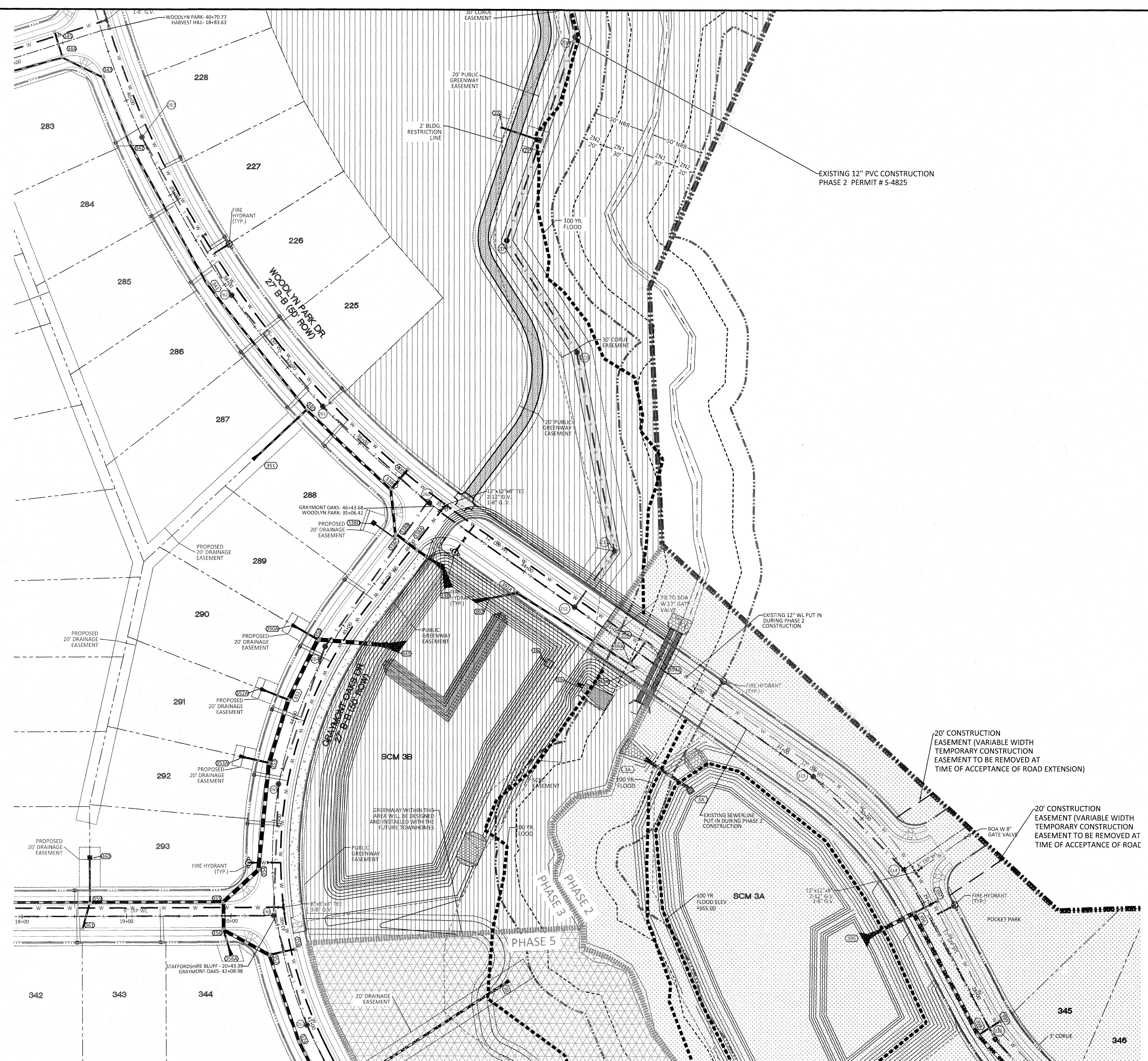
NO.	DATE	REVISION:
1	17/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**  
 THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS PHASE 3**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

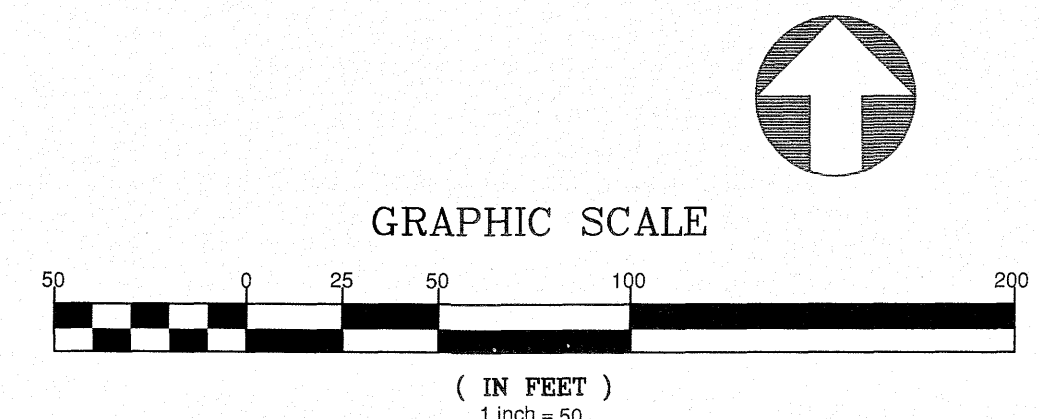
JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE: **PHASE 3 UTILITY PLAN (50 SCALE)**  
 SHEET NO.: 6.4





UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT

NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLECE, III AND ASSOCIATES, P.A.



**SITE PERMITTING APPROVAL**

**Water and Sewer Permits (if applicable)**

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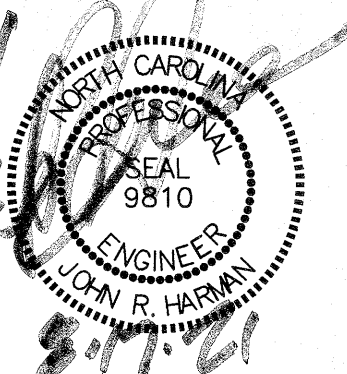
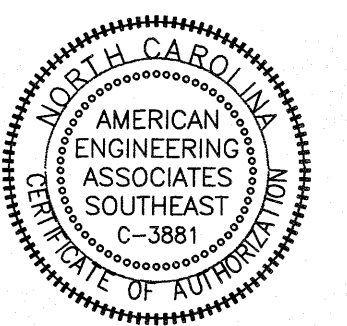
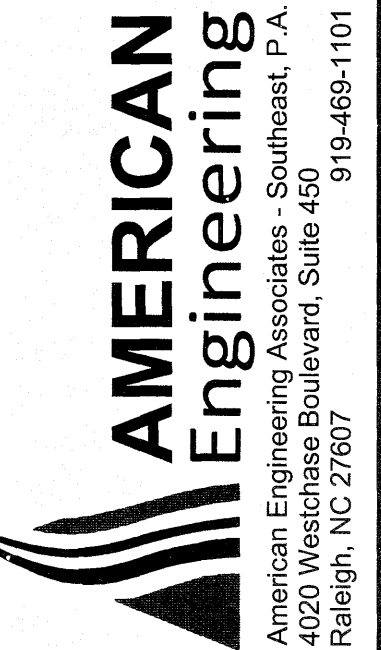
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CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_



NO.	1
DATE	7/21/2021
REVISION	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**

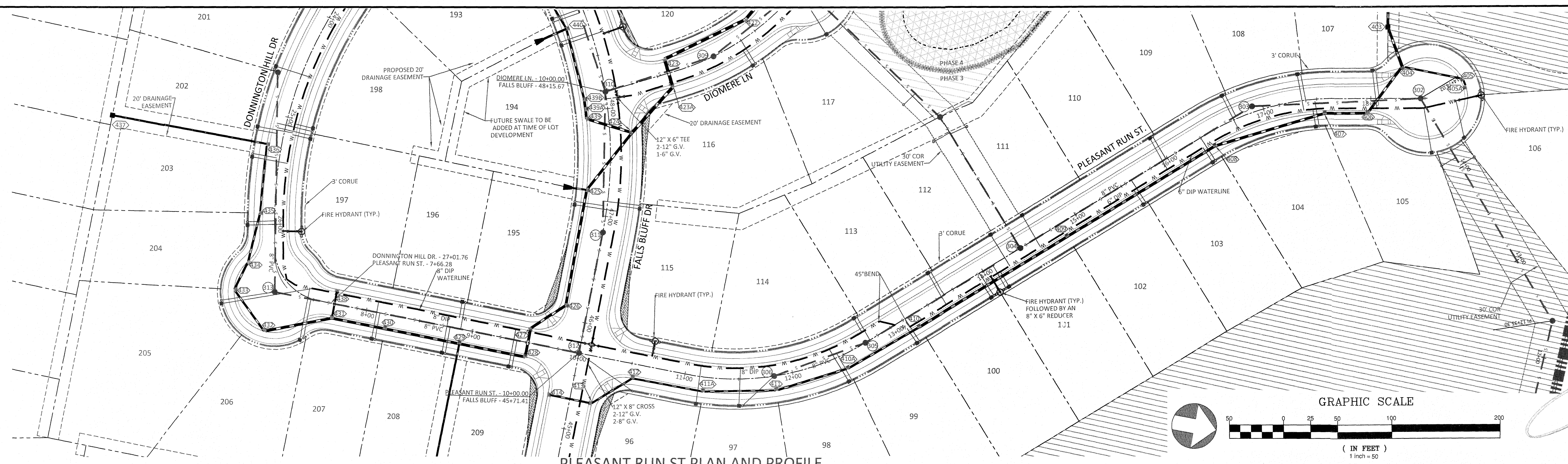
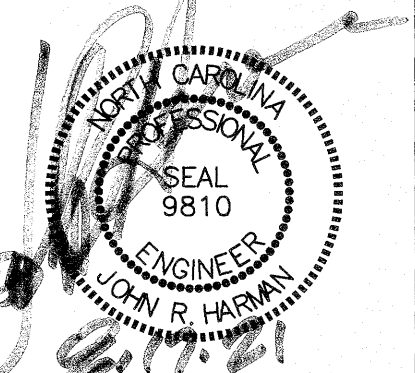
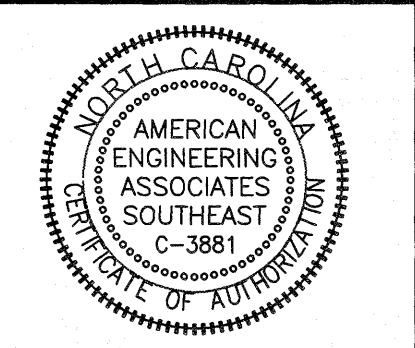
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS PHASE 3**  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**PHASE 3 UTILITY PLAN (50 SCALE)**  
SHEET NO.: 6.5

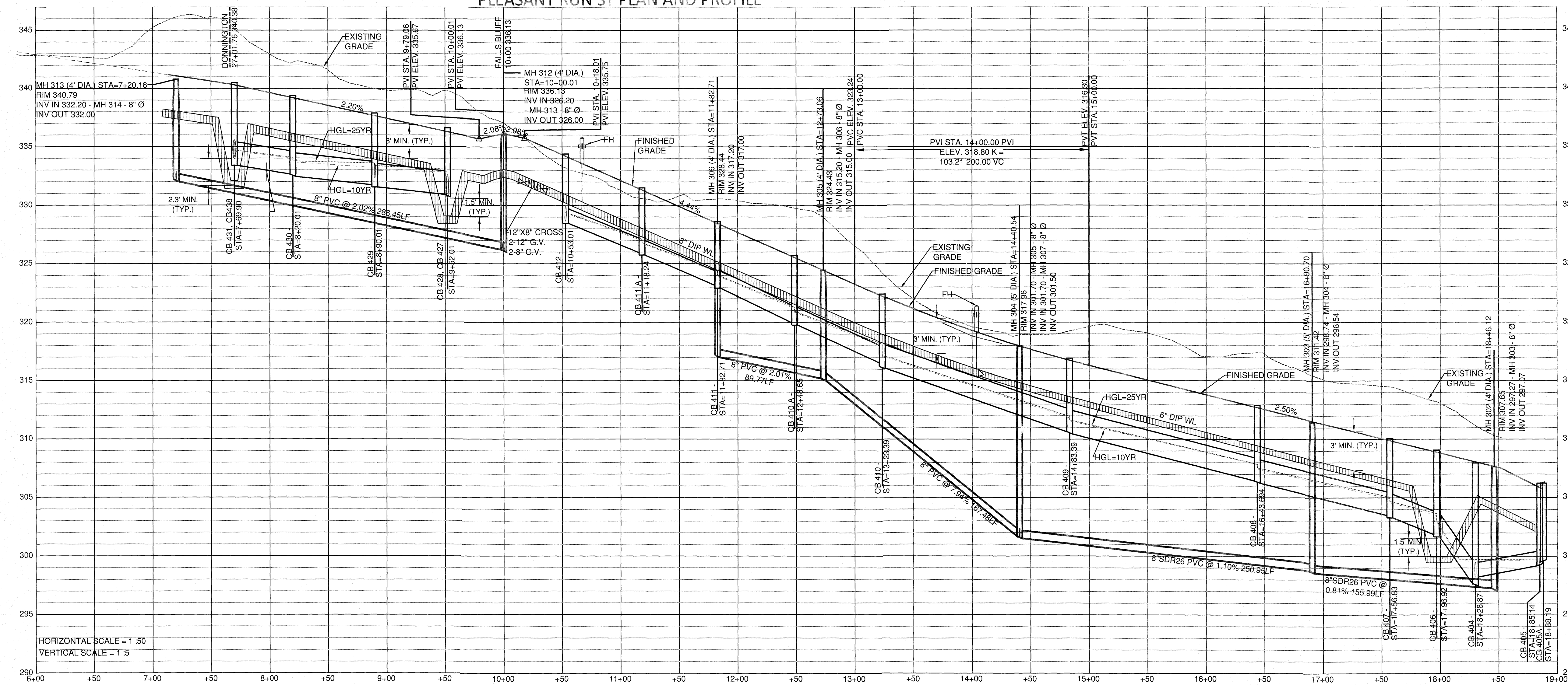
August 17, 2021  
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PLEASANT RUN ST PLAN AND PROFILE

UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT



HORIZONTAL SCALE = 1:50  
VERTICAL SCALE = 1:5

GENERAL NOTE:  
1. ALL WATERLINE AND STORM CROSSINGS SHALL HAVE A MINIMUM OF 1.5' VERTICAL CLEARANCE. IF THIS CANNOT BE ACHIEVED THEN A CRADLE IS TO BE USED SEE DETAIL S-49 ON SHEET CD10

**SITE PERMITTING APPROVAL**  
Water and Sewer Permits (If Applicable)  
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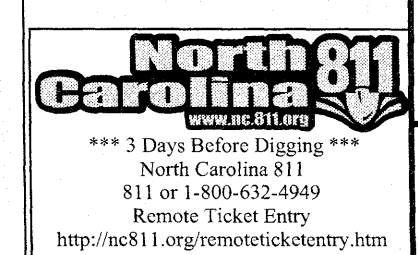
**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval  
Raleigh Water Review Officer

NO.	DATE	DESCRIPTION
1	7/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

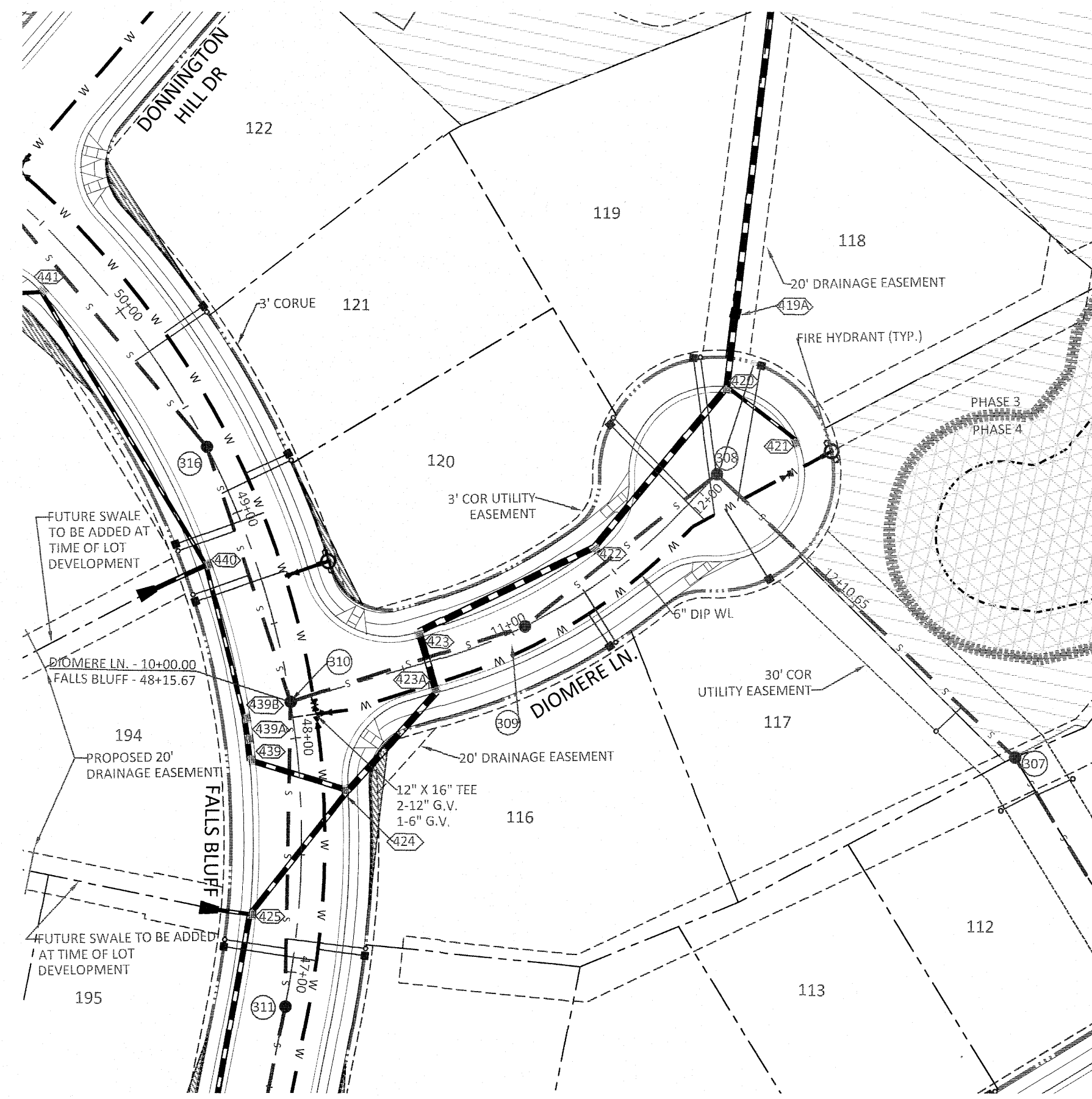
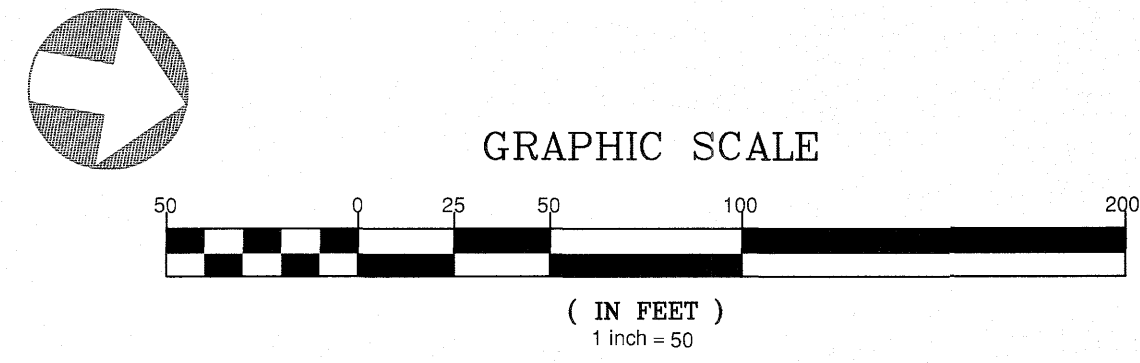
**STIPULATION FOR REUSE**  
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**KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

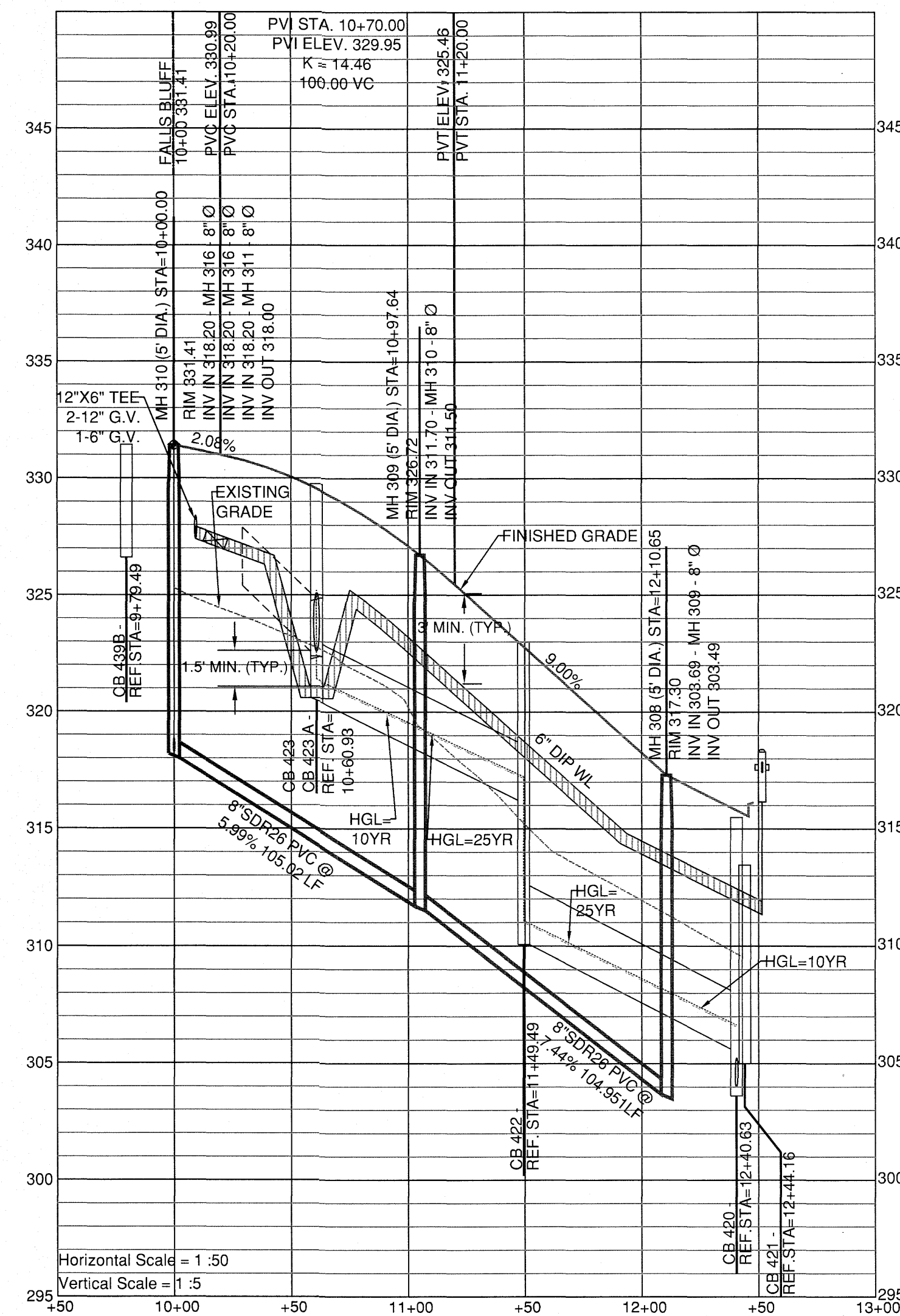
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CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**PLEASANT RUN STREET PLAN & PROFILE**  
SHEET NO.: 7.0







UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT



GENERAL NOTE:  
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**SITE PERMITTING APPROVAL**

Water and Sewer Permits (if applicable)

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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_



NO.	DATE	REVISION
1	7/27/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**

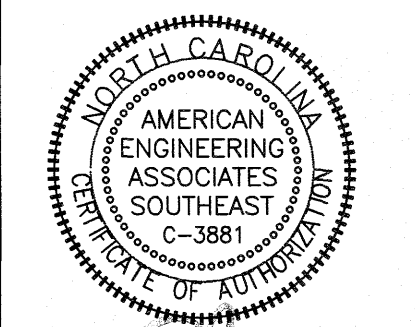
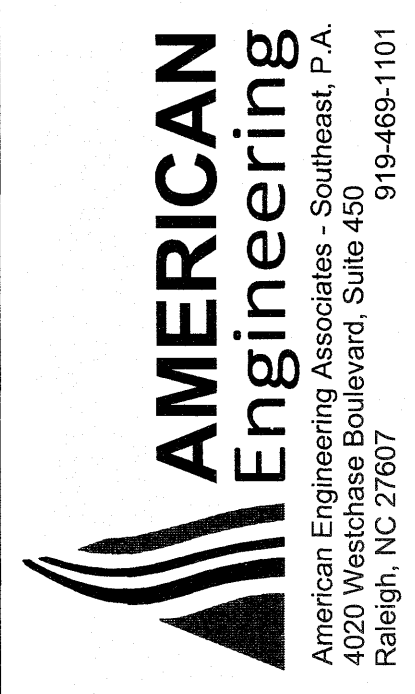
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**KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

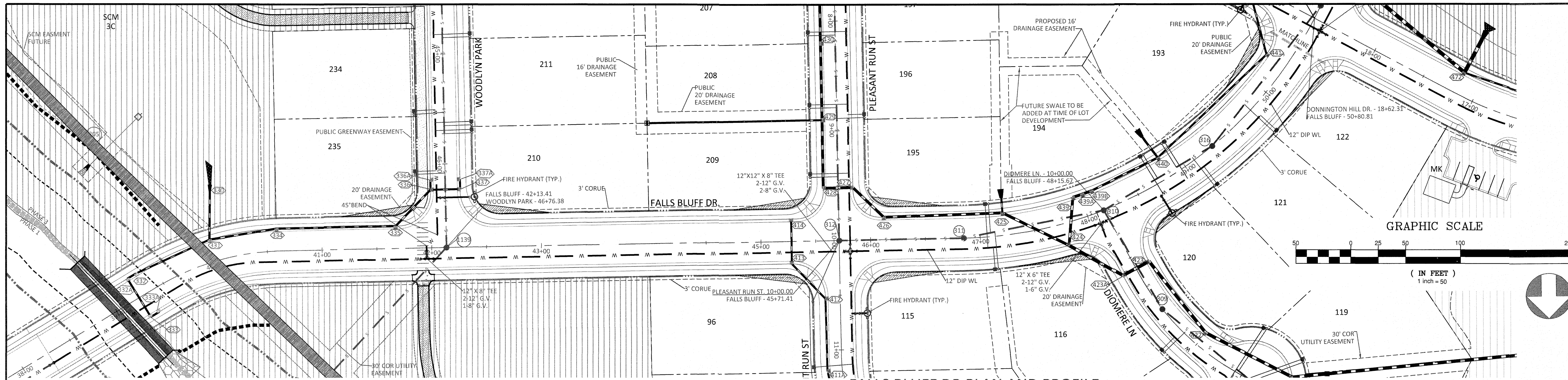
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CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021

SHEET TITLE:  
**DIOMERE LANE  
PLAN & PROFILE**

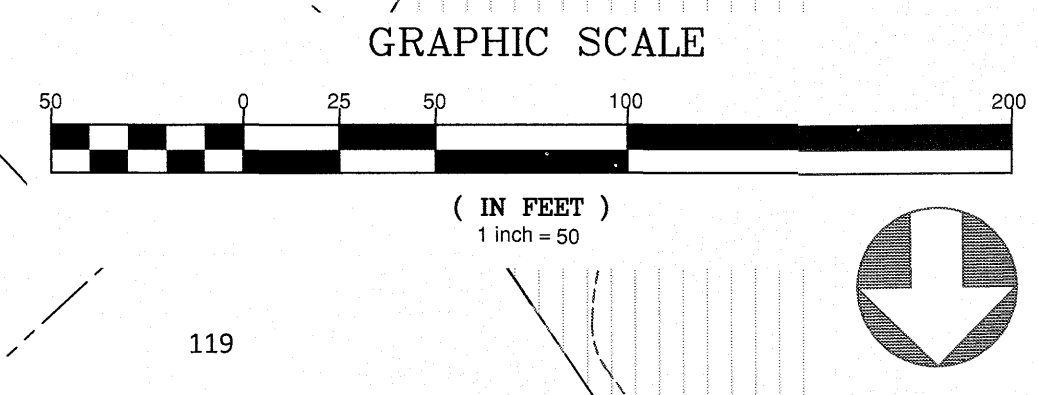
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**8.0**



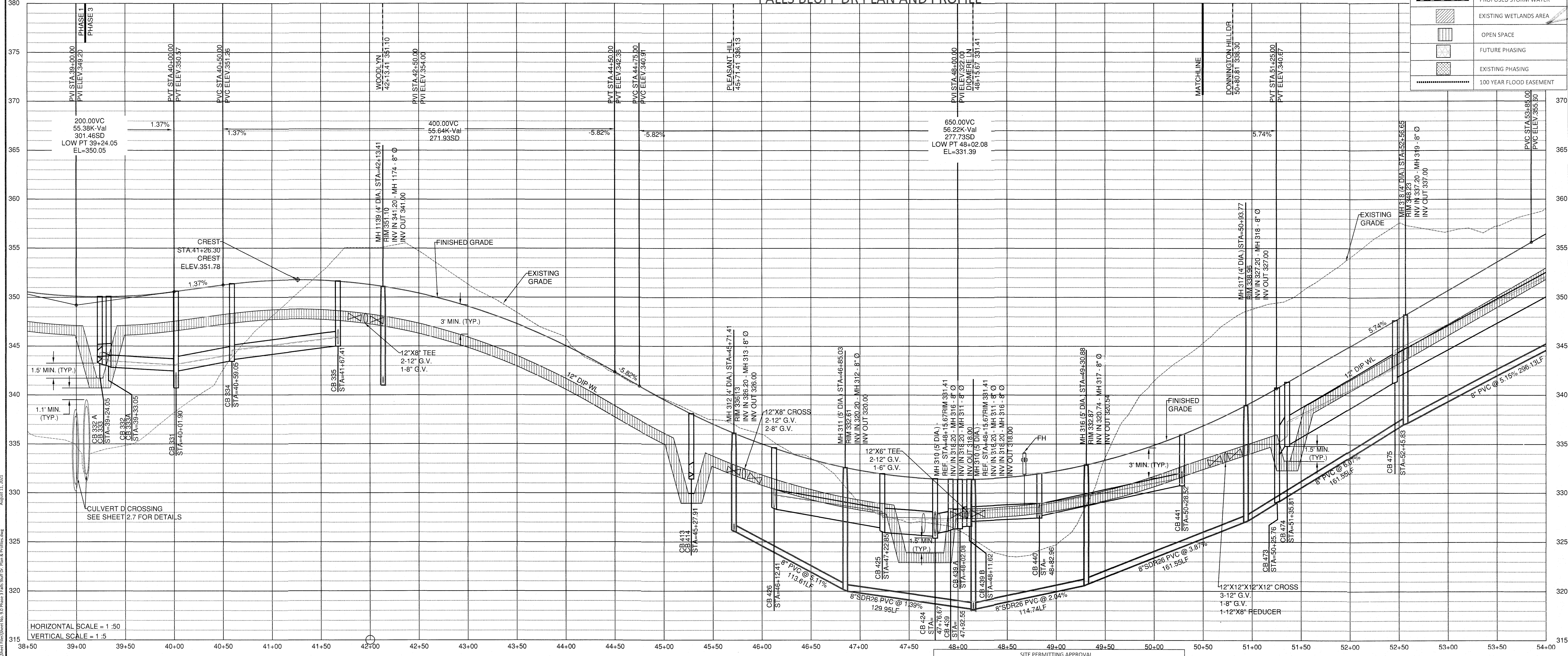




UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	EXISTING LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EDP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASE LINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT



FALLS BLUFF DR PLAN AND PROFILE



**AMERICAN Engineering**  
American Engineering Associates - Southeast, P.A.  
4020 Westchase Boulevard, Suite 450  
Raleigh, NC 27607

**AMERICAN ENGINEERING ASSOCIATES SOUTHEAST**  
C-3881  
STATE OF NORTH CAROLINA  
SEAL  
9810

NO.	DATE	REVISION
1	7/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

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**KALAS FALLS PHASE 3**  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**FALLS BLUFF DRIVE PLAN & PROFILE**  
SHEET NO.: 9.0

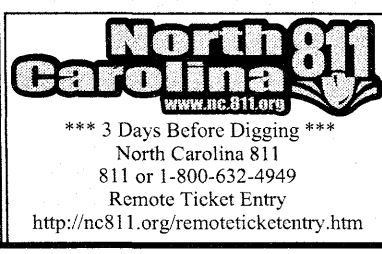
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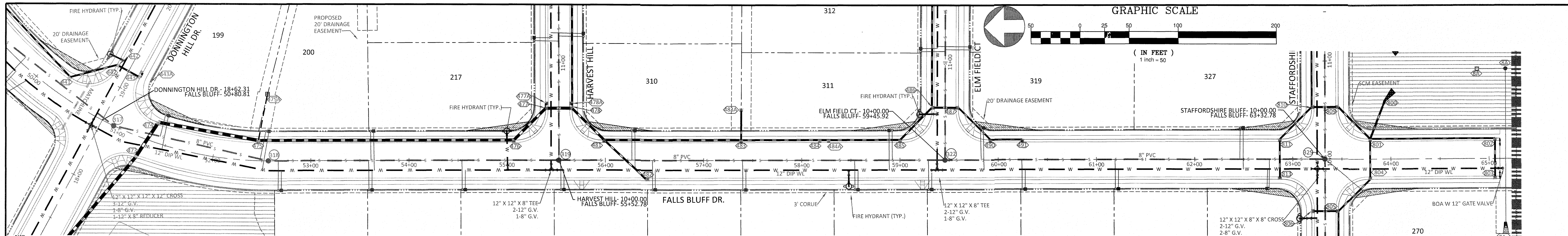
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City of Raleigh Public Utilities Department Permit #

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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer

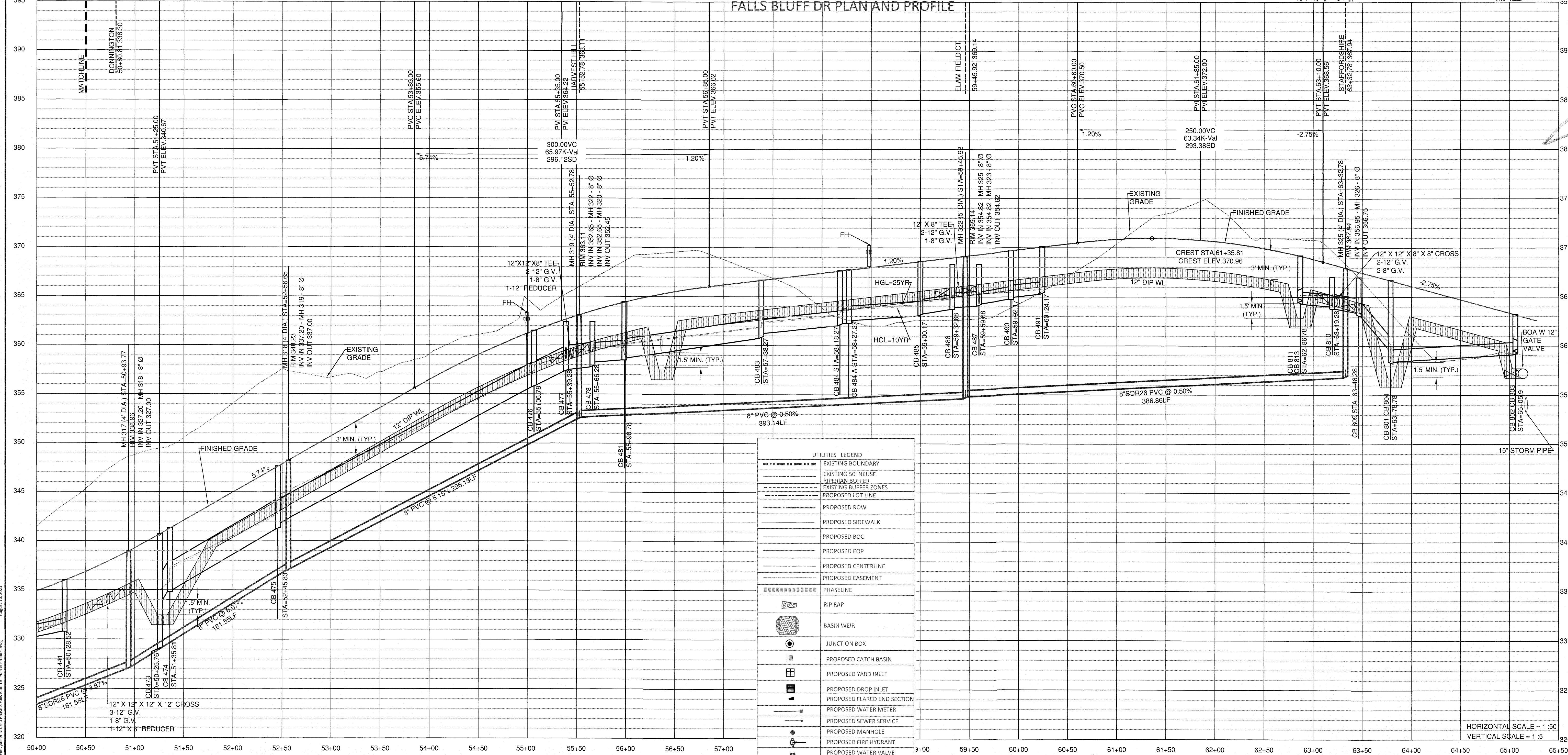


August 11, 2021  
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FALLS BLUFF DR PLAN AND PROFILE

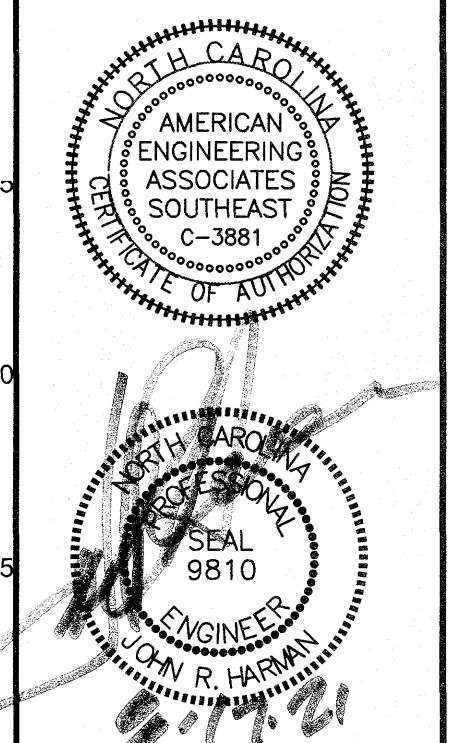
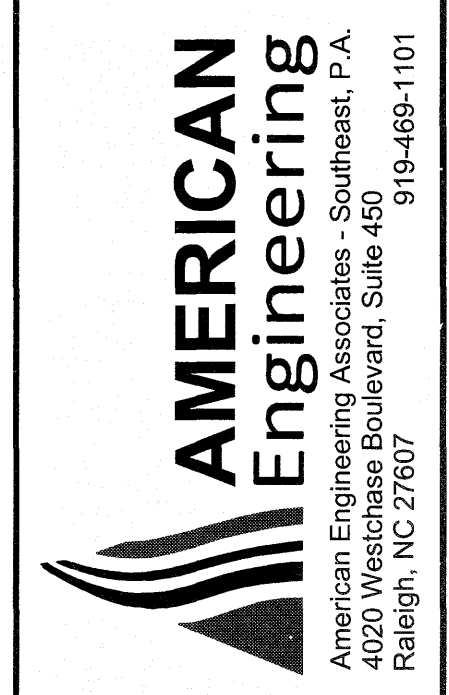
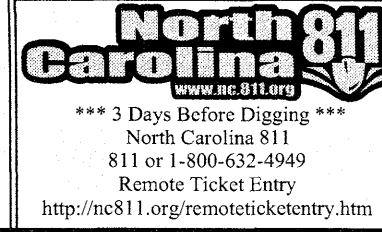


UTILITIES LEGEND	
[Symbol]	EXISTING BOUNDARY
[Symbol]	EXISTING 50' NEUSE RIVERIAN BUFFER
[Symbol]	EXISTING BUFFER ZONES
[Symbol]	PROPOSED LOT LINE
[Symbol]	PROPOSED ROW
[Symbol]	PROPOSED SIDEWALK
[Symbol]	PROPOSED BOC
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[Symbol]	PROPOSED WATER LINE
[Symbol]	PROPOSED STORM WATER
[Symbol]	EXISTING WETLANDS AREA
[Symbol]	OPEN SPACE
[Symbol]	FUTURE PHASING
[Symbol]	EXISTING PHASING
[Symbol]	100 YEAR FLOOD EASEMENT

GENERAL NOTE:  
 1. ALL WATERLINE AND STORM CROSSINGS SHALL HAVE A MINIMUM OF 1.5' VERTICAL CLEARANCE. IF THIS CANNOT BE ACHIEVED THEN A CRADLE IS TO BE USED SEE DETAIL S-49 ON SHEET CD10

**SITE PERMITTING APPROVAL**  
 Water and Sewer Permits (If applicable)  
 The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook, City of Raleigh Public Utilities Department Permit # \_\_\_\_\_  
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 City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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 City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_



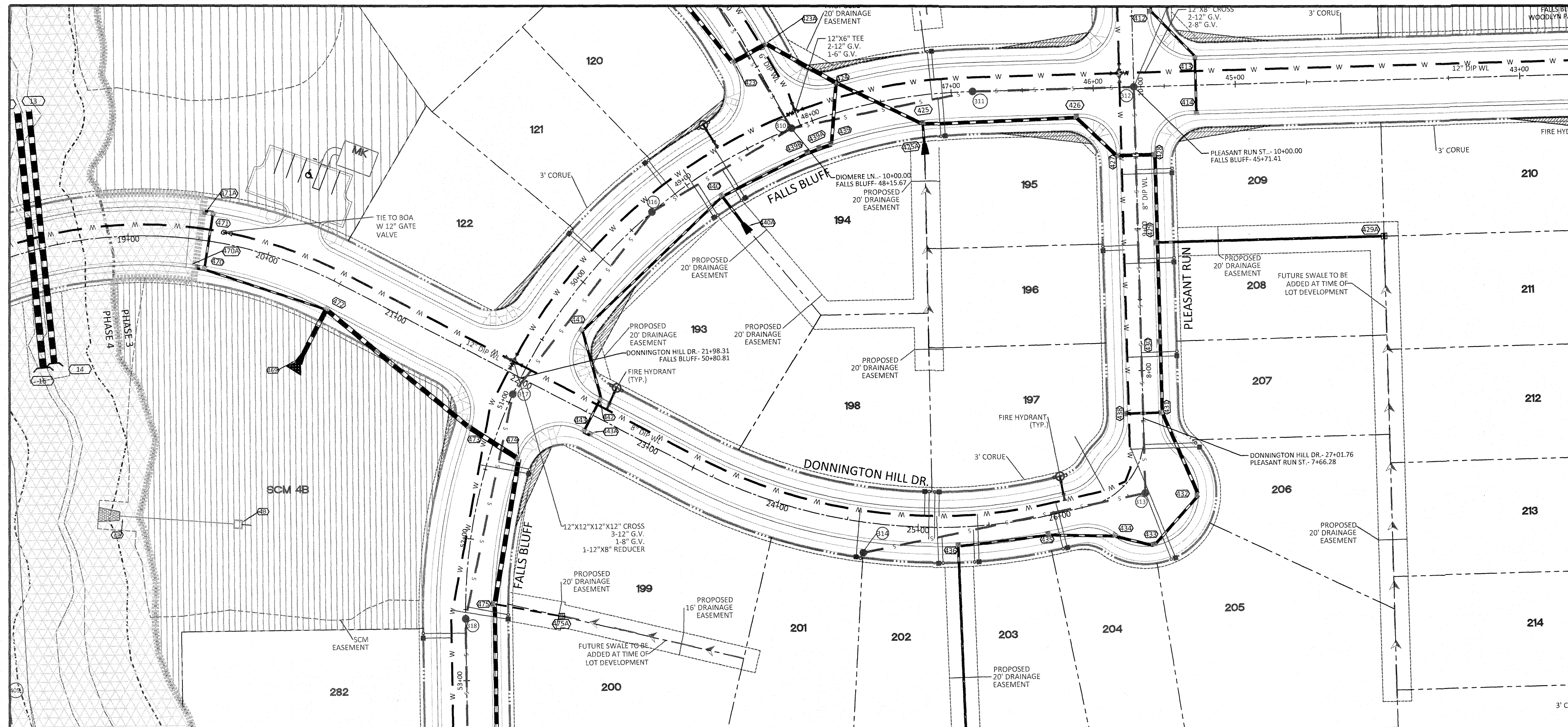
NO.	DATE	REVISION
1	7/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**  
 THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

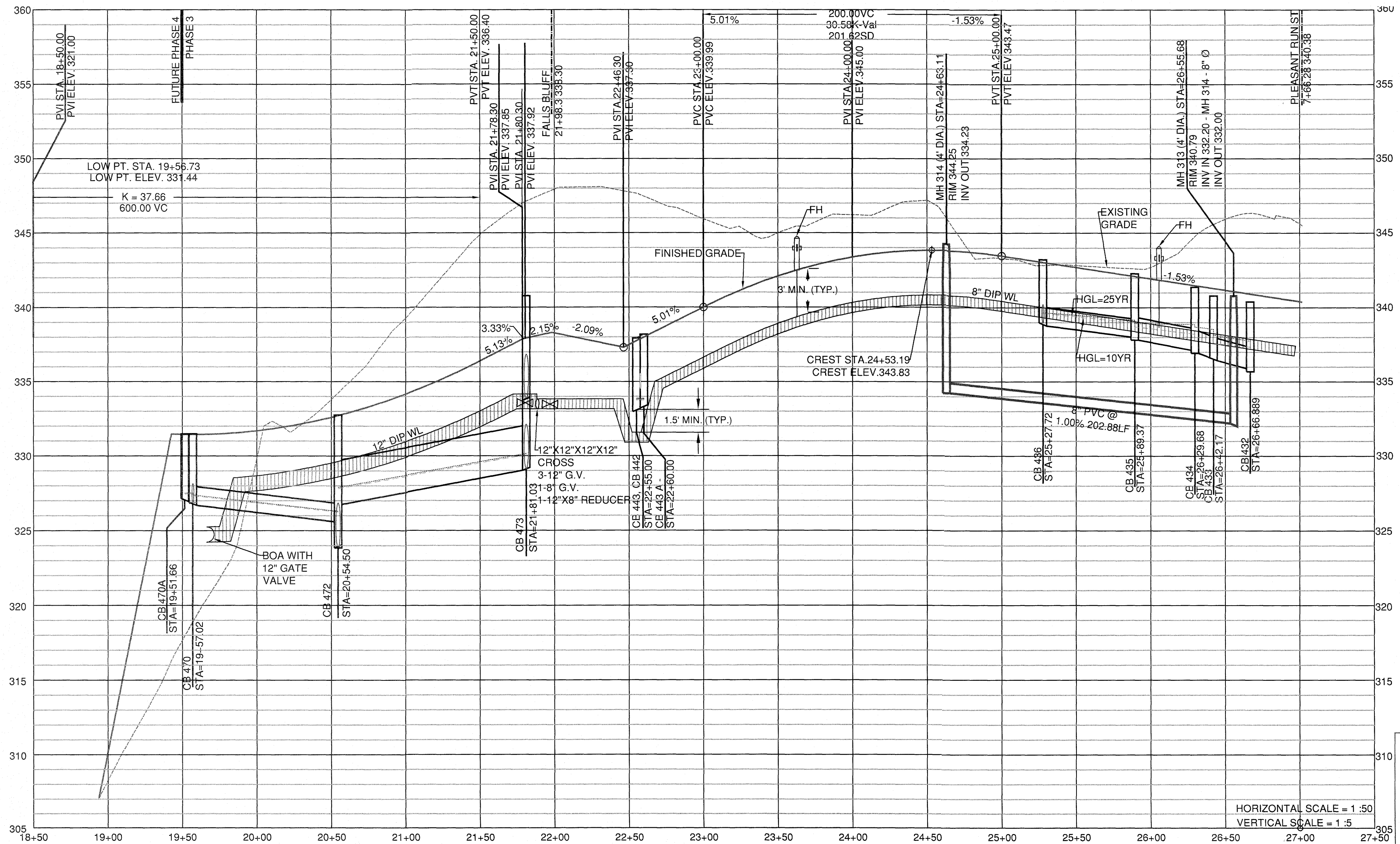
**KALAS FALLS PHASE 3**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**FALLS BLUFF DRIVE PLAN & PROFILE**  
 SHEET NO.: 9.1



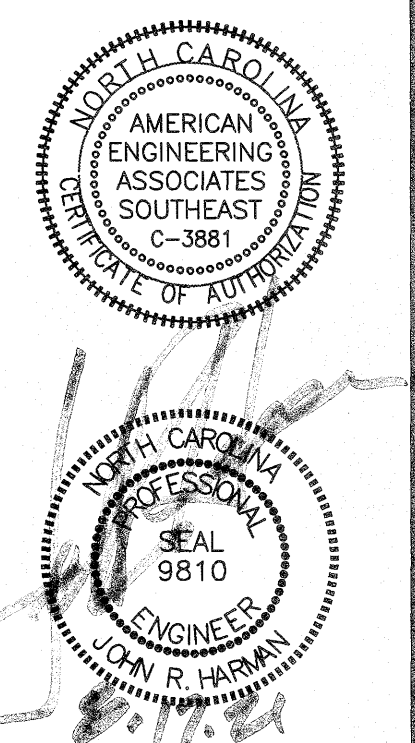
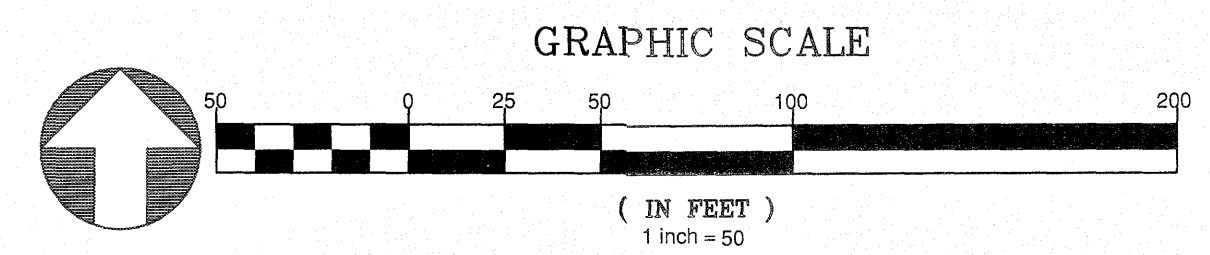


DONNINGTON HILL DR PLAN AND PROFILE



GENERAL NOTE:  
1. ALL WATERLINE AND STORM CROSSINGS SHALL HAVE A MINIMUM OF 1.5' VERTICAL CLEARANCE. IF THIS CANNOT BE ACHIEVED THEN A CRADLE IS TO BE USED SEE DETAIL S-49 ON SHEET CD10

UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIVERIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT



NO.	DATE	REVISION
1	7/27/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

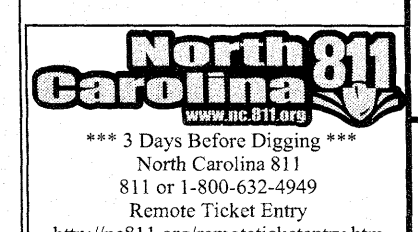
**STIPULATION FOR REUSE**  
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**KALAS FALLS PHASE 3**  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**DONNINGTON HILL DRIVE PLAN & PROFILE**  
SHEET NO.: 10.0

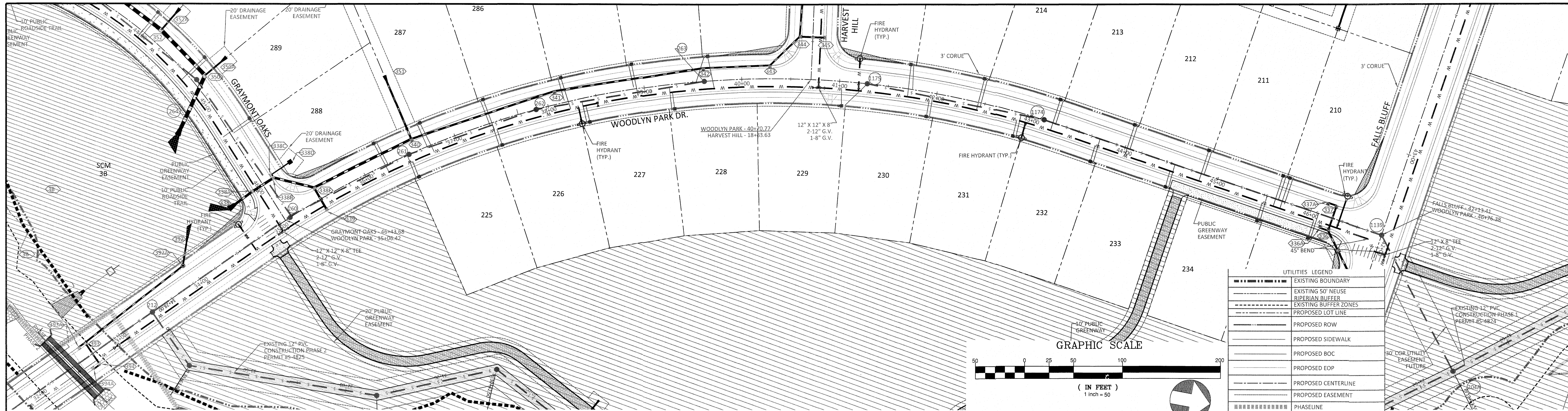
**SITE PERMITTING APPROVAL**  
Water and Sewer Permits (if applicable)  
The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer \_\_\_\_\_

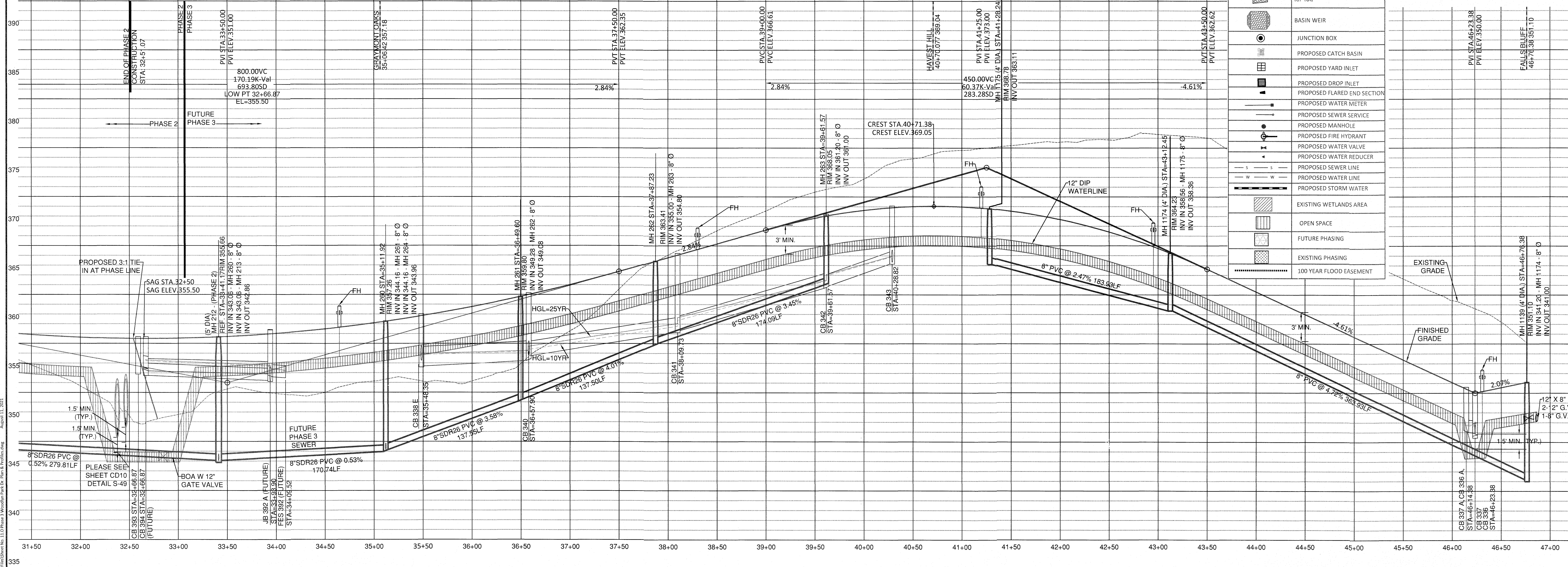


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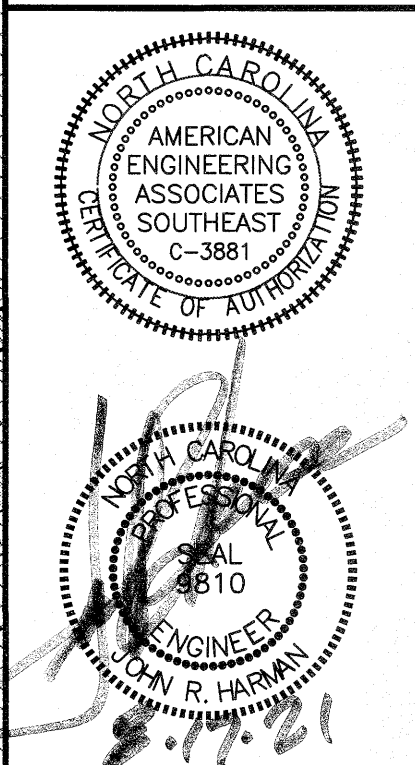
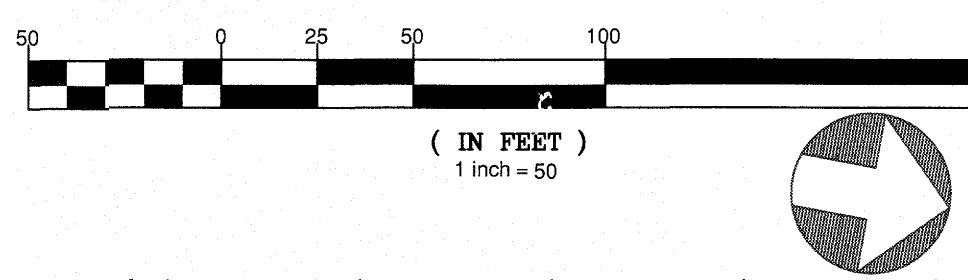


WOODLYN PARK DR PLAN AND PROFILE



**UTILITIES LEGEND**

[Symbol]	EXISTING BOUNDARY
[Symbol]	EXISTING 50' NEUSE RIVERIAN BUFFER
[Symbol]	EXISTING BUFFER ZONES
[Symbol]	PROPOSED LOT LINE
[Symbol]	PROPOSED ROW
[Symbol]	PROPOSED SIDEWALK
[Symbol]	PROPOSED BOC
[Symbol]	PROPOSED EOP
[Symbol]	PROPOSED CENTERLINE
[Symbol]	PROPOSED EASEMENT
[Symbol]	PHASELINE
[Symbol]	RIP RAP
[Symbol]	BASIN WEIR
[Symbol]	JUNCTION BOX
[Symbol]	PROPOSED CATCH BASIN
[Symbol]	PROPOSED YARD INLET
[Symbol]	PROPOSED DROP INLET
[Symbol]	PROPOSED FLARED END SECTION
[Symbol]	PROPOSED WATER METER
[Symbol]	PROPOSED SEWER SERVICE
[Symbol]	PROPOSED MANHOLE
[Symbol]	PROPOSED FIRE HYDRANT
[Symbol]	PROPOSED WATER VALVE
[Symbol]	PROPOSED WATER REDUCER
[Symbol]	PROPOSED SEWER LINE
[Symbol]	PROPOSED WATER LINE
[Symbol]	PROPOSED STORM WATER
[Symbol]	EXISTING WETLANDS AREA
[Symbol]	OPEN SPACE
[Symbol]	FUTURE PHASING
[Symbol]	EXISTING PHASING
[Symbol]	100 YEAR FLOOD EASEMENT



NO.	DATE	REVISION
1	7/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**  
 THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS PHASE 3**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	WOODLYN PARK DRIVE PLAN & PROFILE
SHEET NO.:	11.0

**GENERAL NOTE:**  
 1. ALL WATERLINE AND STORM CROSSINGS SHALL HAVE A MINIMUM OF 1.5' VERTICAL CLEARANCE. IF THIS CANNOT BE ACHIEVED THEN A CRADLE IS TO BE USED SEE DETAIL S-49 ON SHEET CD10

**SITE PERMITTING APPROVAL**  
 Water and Sewer Permits (If applicable)  
 The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

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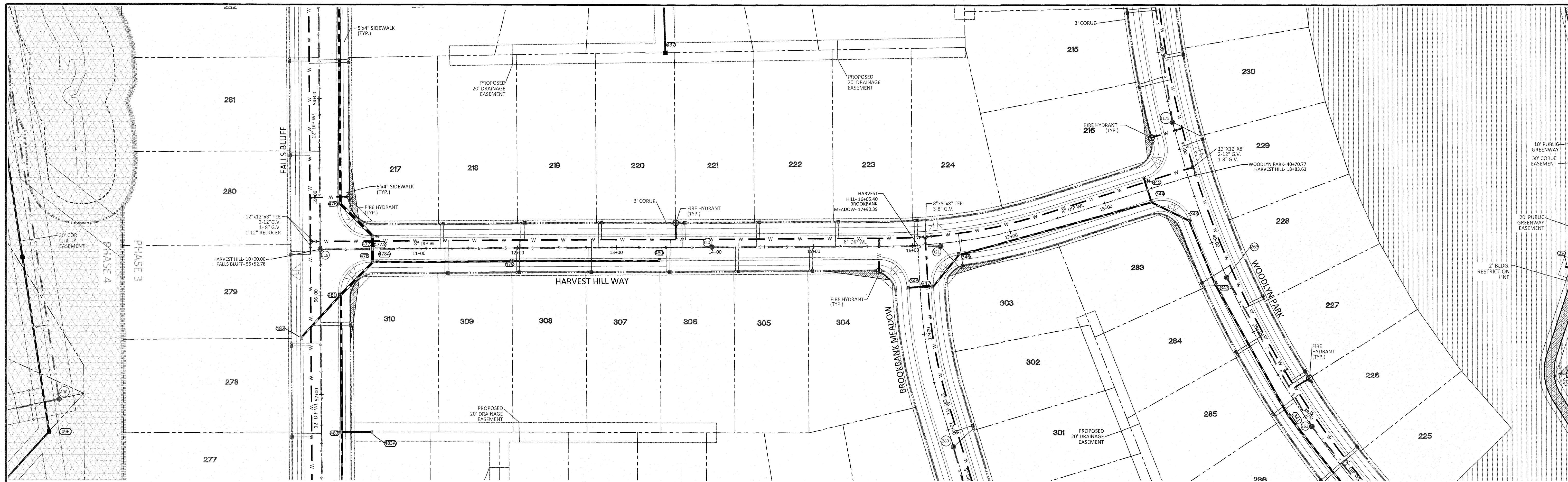
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 City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_

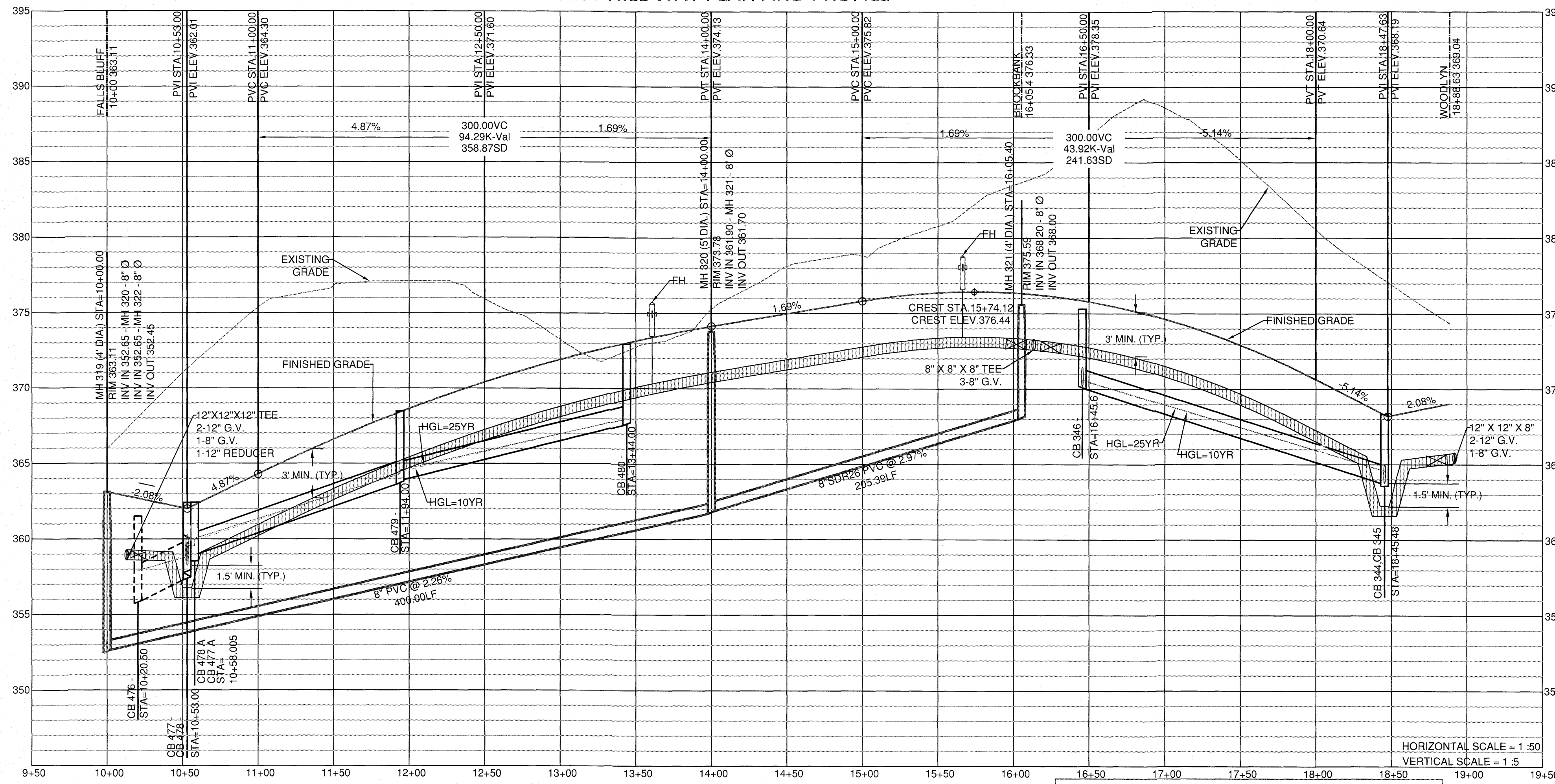




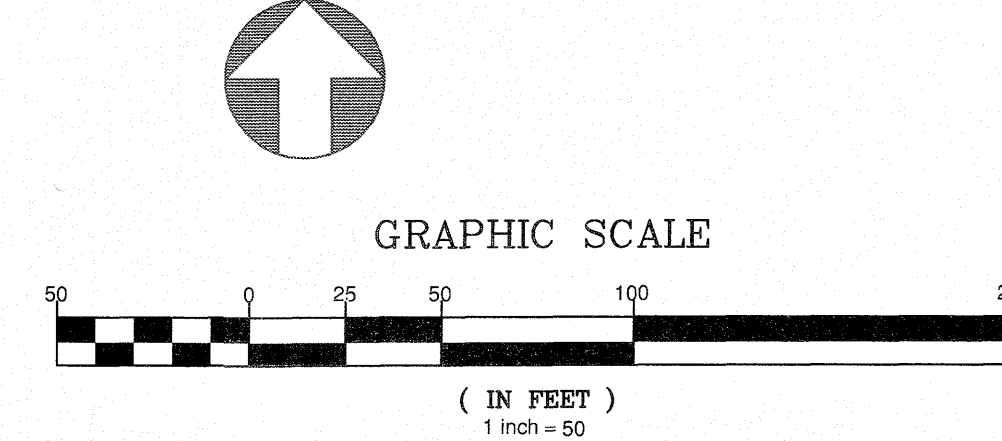


HARVEST HILL WAY PLAN AND PROFILE

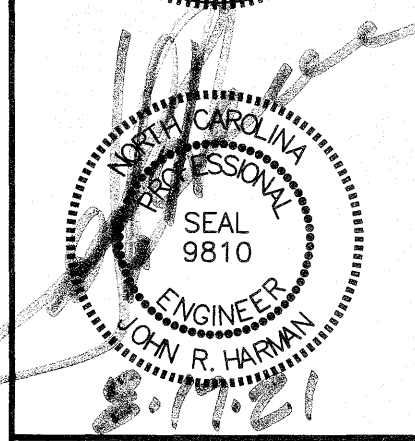
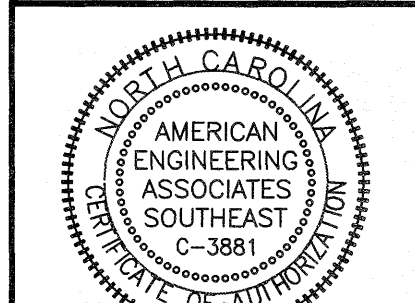
UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIVERIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT



GENERAL NOTE  
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**AMERICAN Engineering**  
 American Engineering Associates, Southeast, P.A.  
 4020 Westchase Boulevard, Suite 450  
 Raleigh, NC 27607  
 919-468-1101



NO.	DATE	REVISION
1	17/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**  
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**KALAS FALLS PHASE 3**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

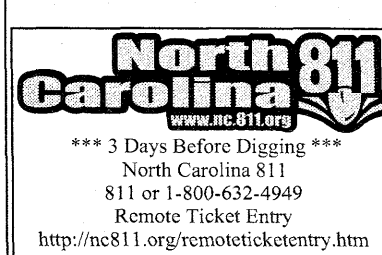
JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**HARVEST HILL WAY PLAN & PROFILE**  
 SHEET NO.: 12.0

**Water and Sewer Permits (if applicable)**  
 The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and Construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

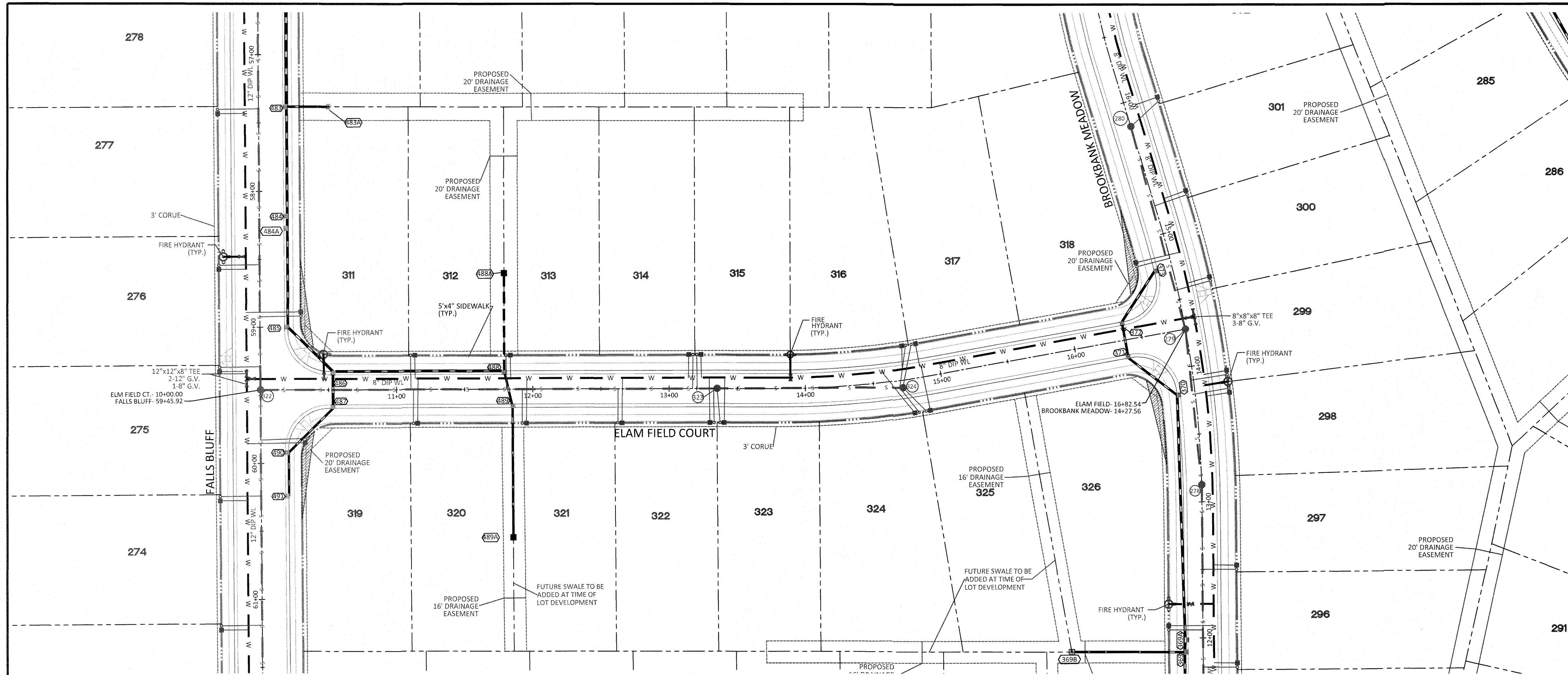
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 City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

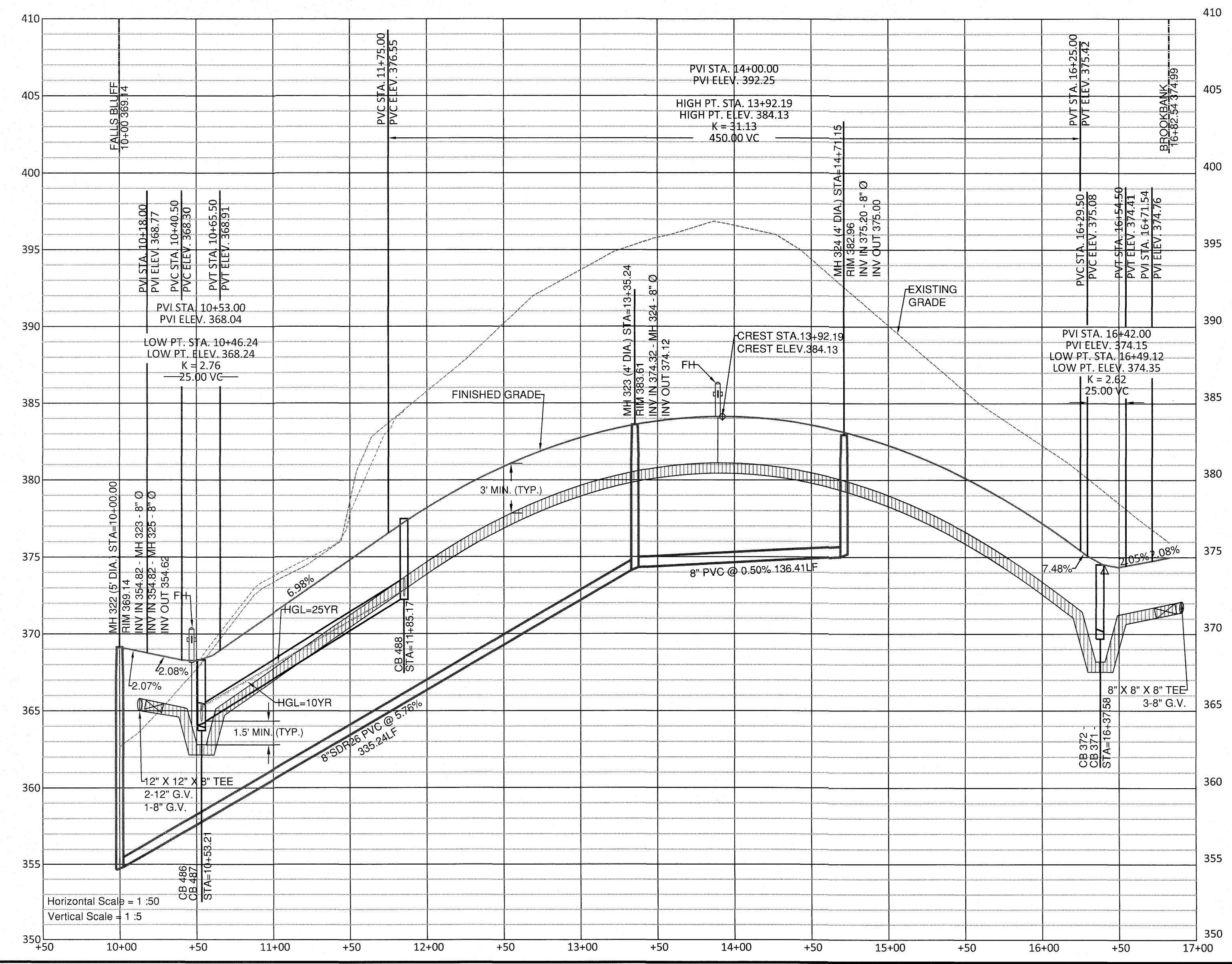
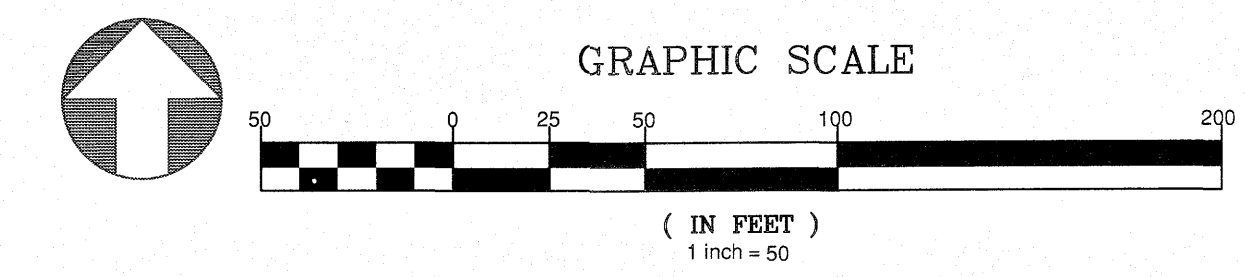
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 City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_







ELAM FIELD CT PLAN AND PROFILE



GENERAL NOTE:  
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UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT

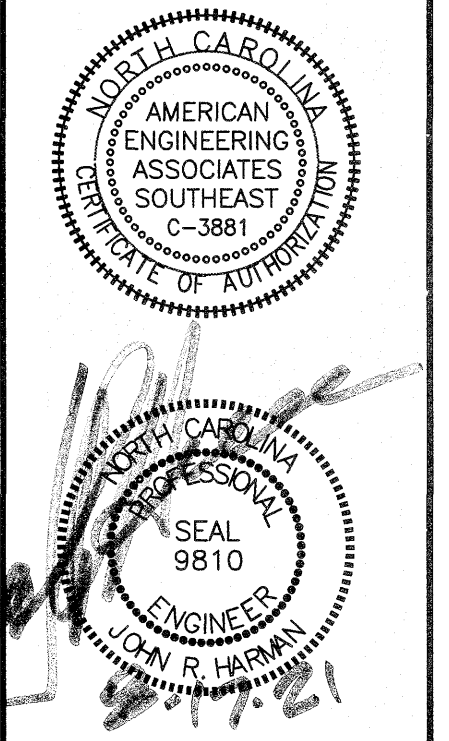
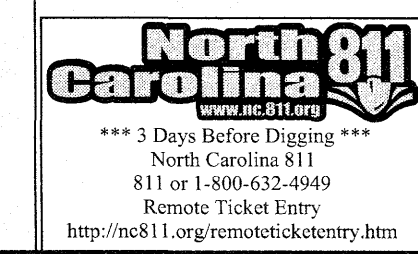
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 City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_



NO.	DATE	REVISION:
1	7/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

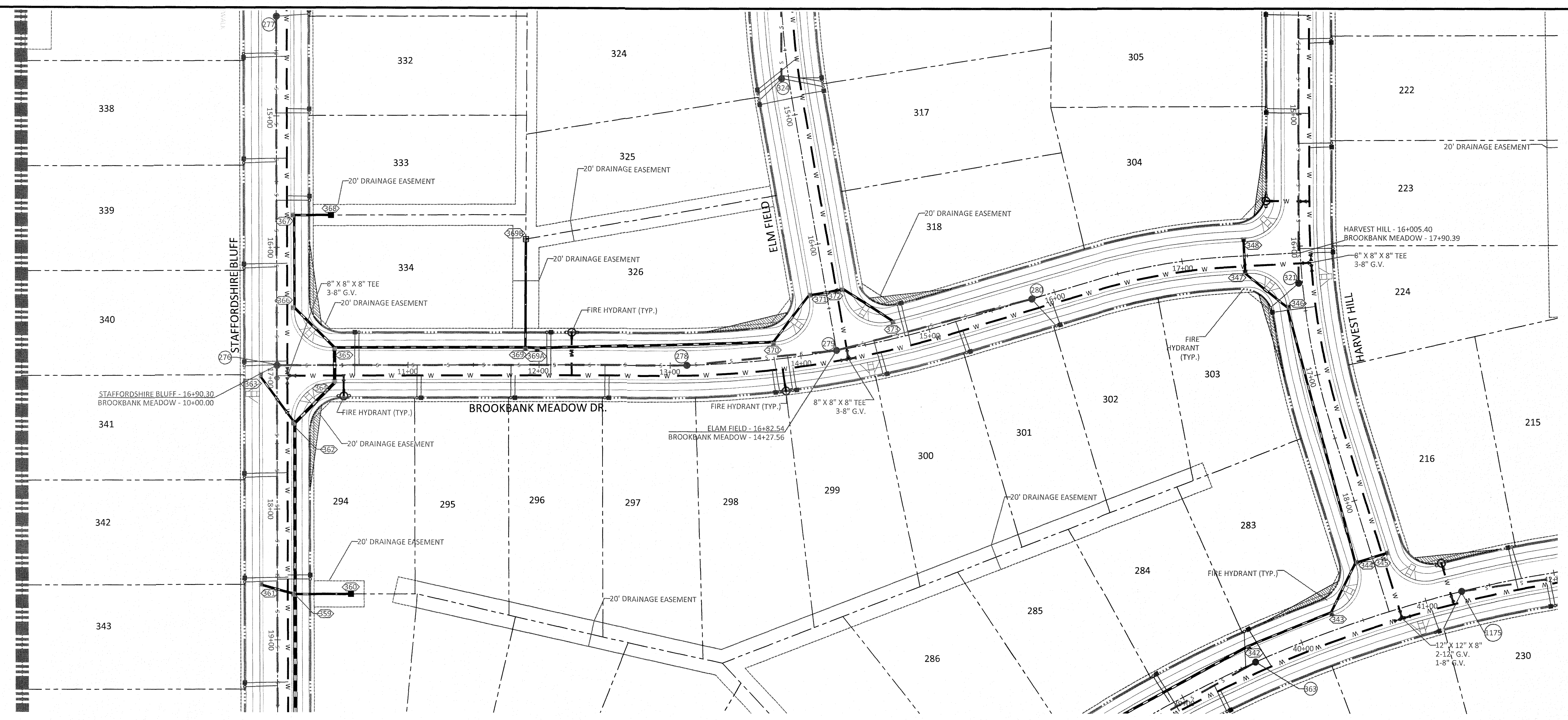
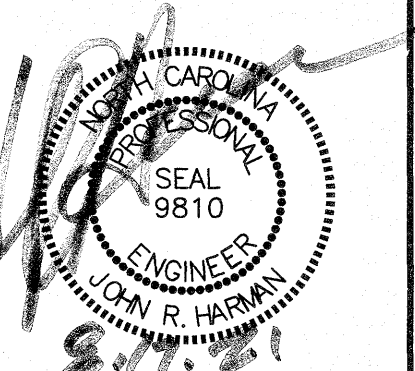
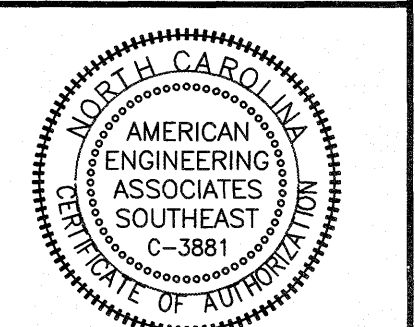
**STIPULATION FOR REUSE**  
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**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**ELAM FIELD CT.  
 PLAN & PROFILE**  
 SHEET NO.:  
**13.0**

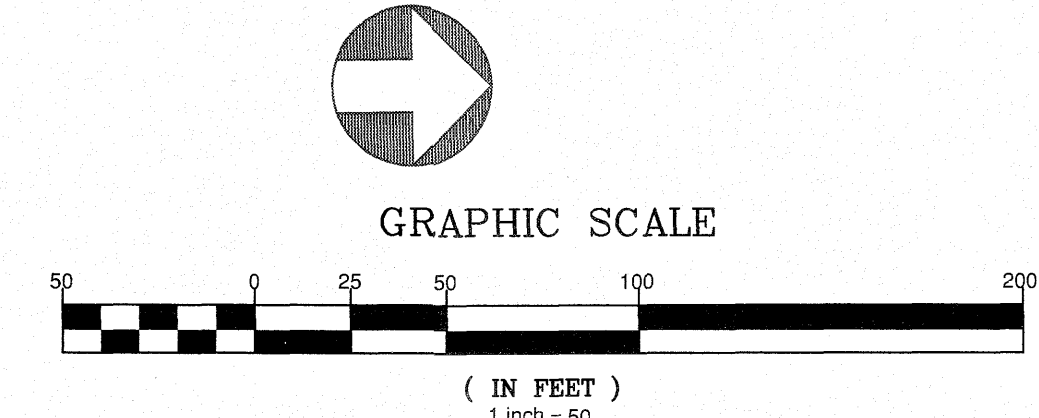
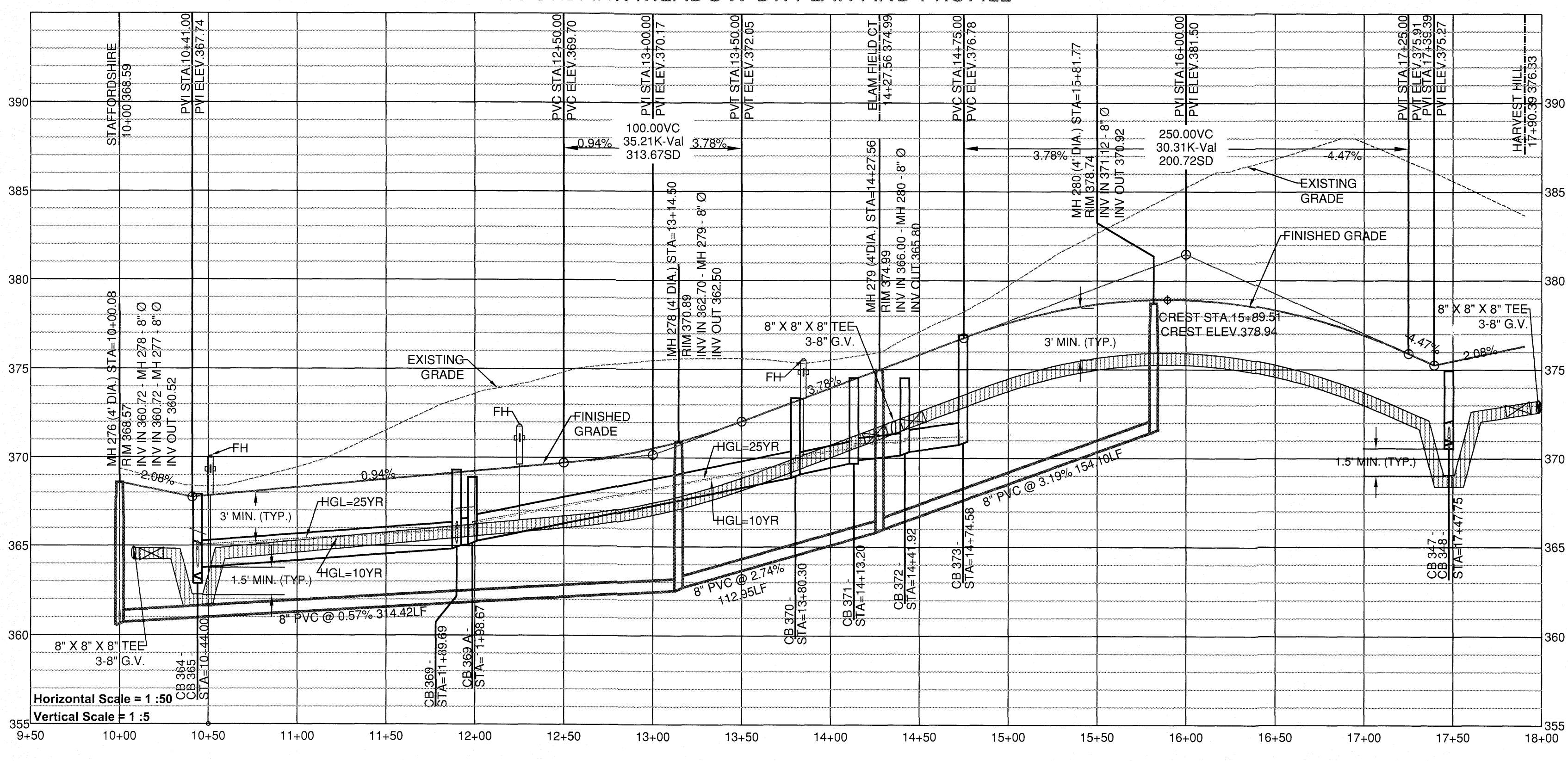
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 2:\projects\2020\Wetlands\Drawings\Phase 3\Drawings\Elam Field Ct - Plan and Profile.dwg August 11, 2021





**BROOKBANK MEADOW DR PLAN AND PROFILE**

UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIVERIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASILINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
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	100 YEAR FLOOD EASEMENT



GENERAL NOTE:  
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NO.	DATE	REVISION
1	7/31/2021	LIST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

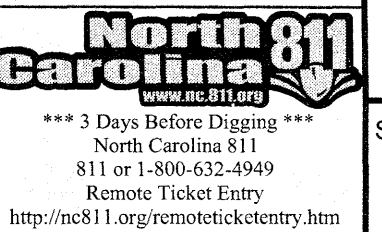
**STIPULATION FOR REUSE**  
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**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

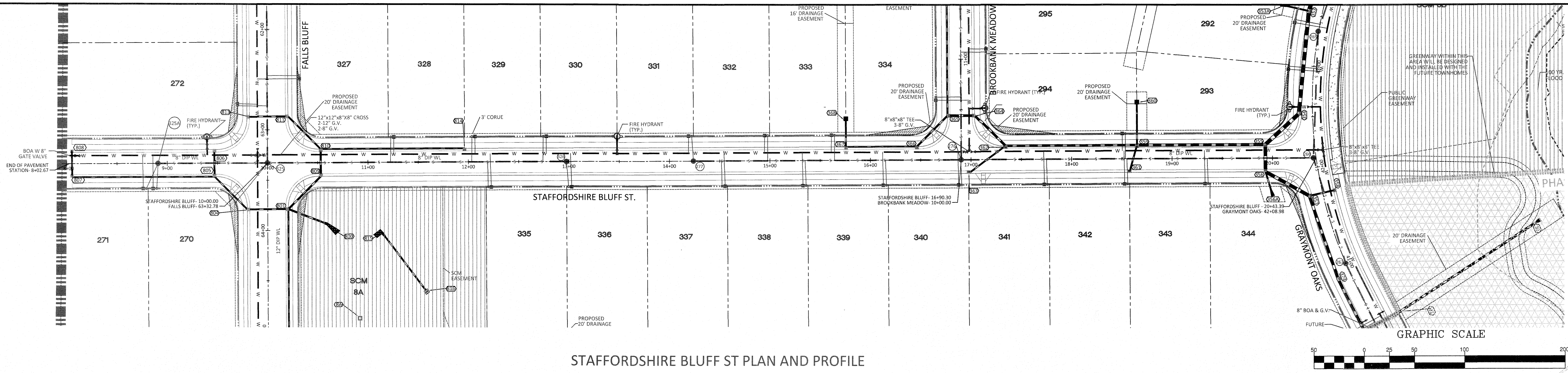
JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	<b>BROOKBANK MEADOW DRIVE PLAN &amp; PROFILE</b>
SHEET NO.:	14.0

**SITE PERMITTING APPROVAL**  
 Water and Sewer Permits (if applicable)  
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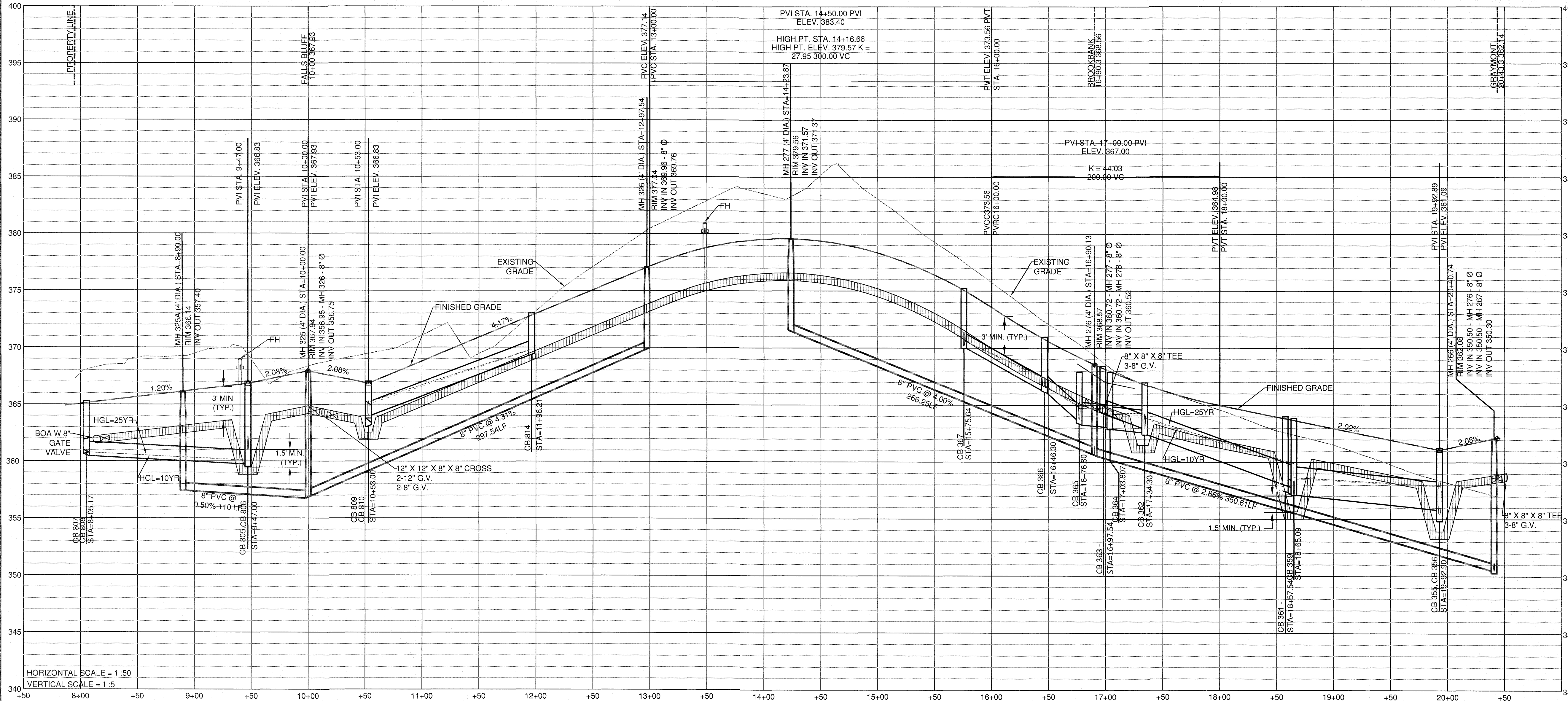
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 City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer







STAFFORDSHIRE BLUFF ST PLAN AND PROFILE



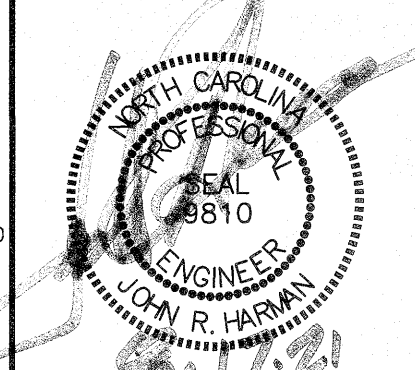
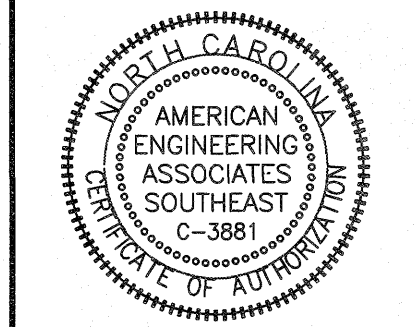
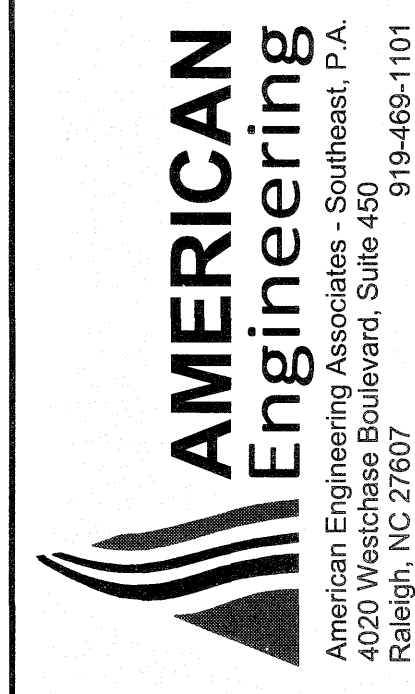
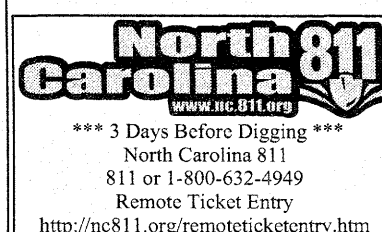
UTILITIES LEGEND	
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[Symbol]	EXISTING 50' NEUSE RIPERIAN BUFFER
[Symbol]	EXISTING BUFFER ZONES
[Symbol]	PROPOSED LOT LINE
[Symbol]	PROPOSED ROW
[Symbol]	PROPOSED SIDEWALK
[Symbol]	PROPOSED BOC
[Symbol]	PROPOSED EOP
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[Symbol]	PROPOSED YARD INLET
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[Symbol]	PROPOSED WATER METER
[Symbol]	PROPOSED SEWER SERVICE
[Symbol]	PROPOSED MANHOLE
[Symbol]	PROPOSED FIRE HYDRANT
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[Symbol]	PROPOSED WATER REDUCER
[Symbol]	PROPOSED SEWER LINE
[Symbol]	PROPOSED WATER LINE
[Symbol]	PROPOSED STORM WATER
[Symbol]	EXISTING WETLANDS AREA
[Symbol]	OPEN SPACE
[Symbol]	FUTURE PHASING
[Symbol]	EXISTING PHASING

GENERAL NOTE:  
 1. ALL WATERLINE AND STORM CROSSINGS SHALL HAVE A MINIMUM OF 1.5' VERTICAL CLEARANCE. IF THIS CANNOT BE ACHIEVED THEN A CRADLE IS TO BE USED SEE DETAIL S-49 ON SHEET CD10

NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLECE, III AND ASSOCIATES, P.A.

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 Raleigh Water Review Officer \_\_\_\_\_



NO.	DATE	REVISION
1	7/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

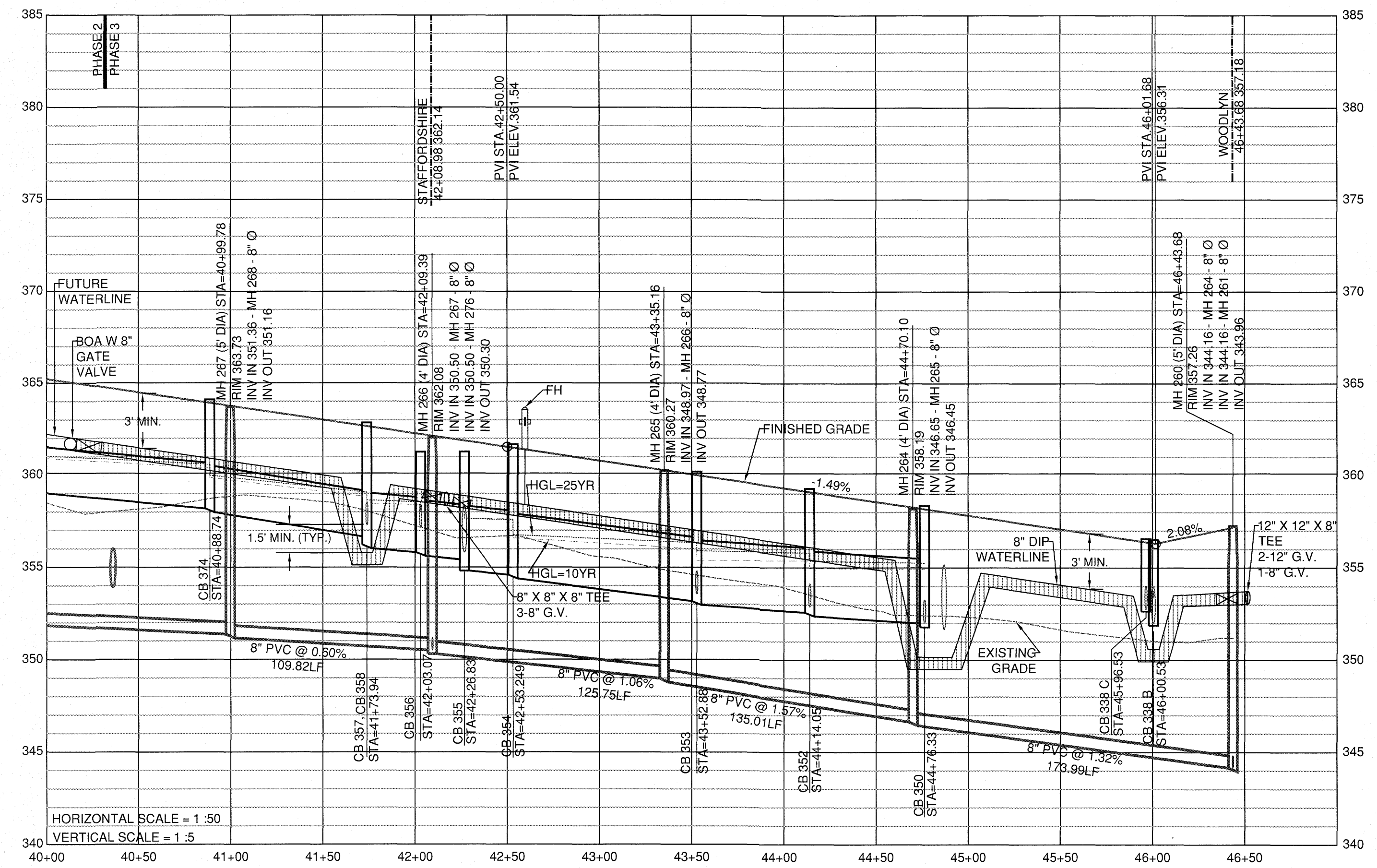
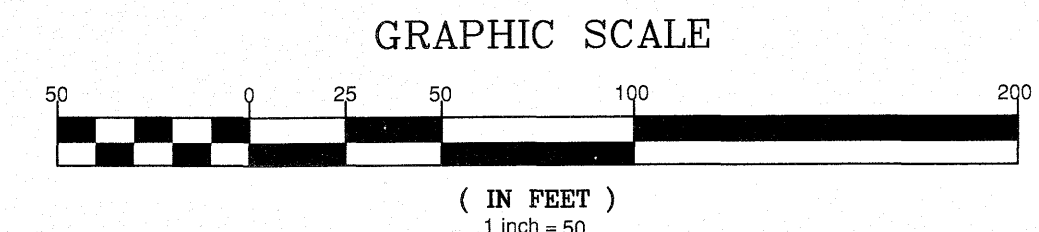
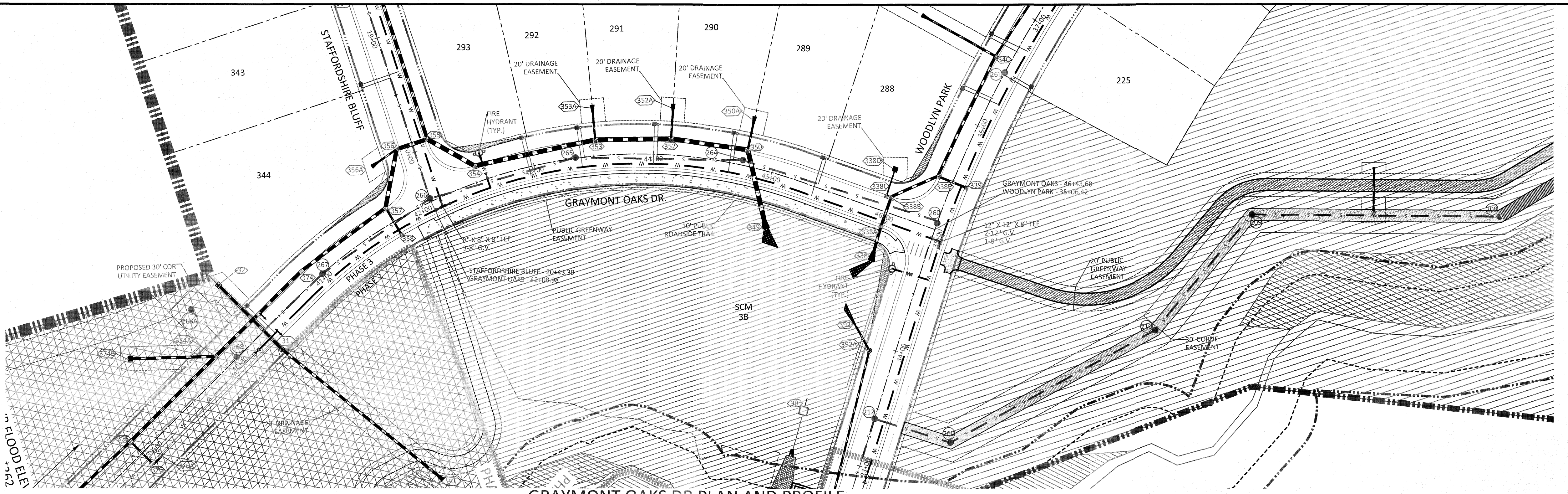
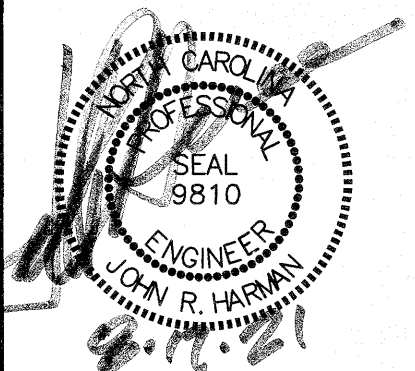
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 THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	STAFFORDSHIRE BLUFF STREET PLAN & PROFILE
SHEET NO.:	15.0

L:\Projects\2021\Kallas Falls\Phase 3\Drawings\Bldg\PS - Plan & Profile.dwg August 18, 2021





GENERAL NOTE:  
1. ALL WATERLINE AND STORM CROSSINGS SHALL HAVE A MINIMUM OF 1.5' VERTICAL CLEARANCE. IF THIS CANNOT BE ACHIEVED THEN A CRADLE IS TO BE USED SEE DETAIL S-49 ON SHEET CD10

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UTILITIES LEGEND	
[Symbol]	EXISTING BOUNDARY
[Symbol]	EXISTING 50' NEUSE
[Symbol]	RIPARIAN BUFFER
[Symbol]	EXISTING BUFFER ZONES
[Symbol]	PROPOSED LOT LINE
[Symbol]	PROPOSED ROW
[Symbol]	PROPOSED SIDEWALK
[Symbol]	PROPOSED BOC
[Symbol]	PROPOSED EOP
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[Symbol]	OPEN SPACE
[Symbol]	FUTURE PHASING
[Symbol]	EXISTING PHASING
[Symbol]	100 YEAR FLOOD EASEMENT

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PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

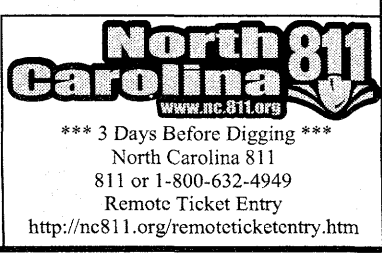
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CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021

SHEET TITLE:  
**GRAYMONT OAKS DRIVE PLAN & PROFILE**

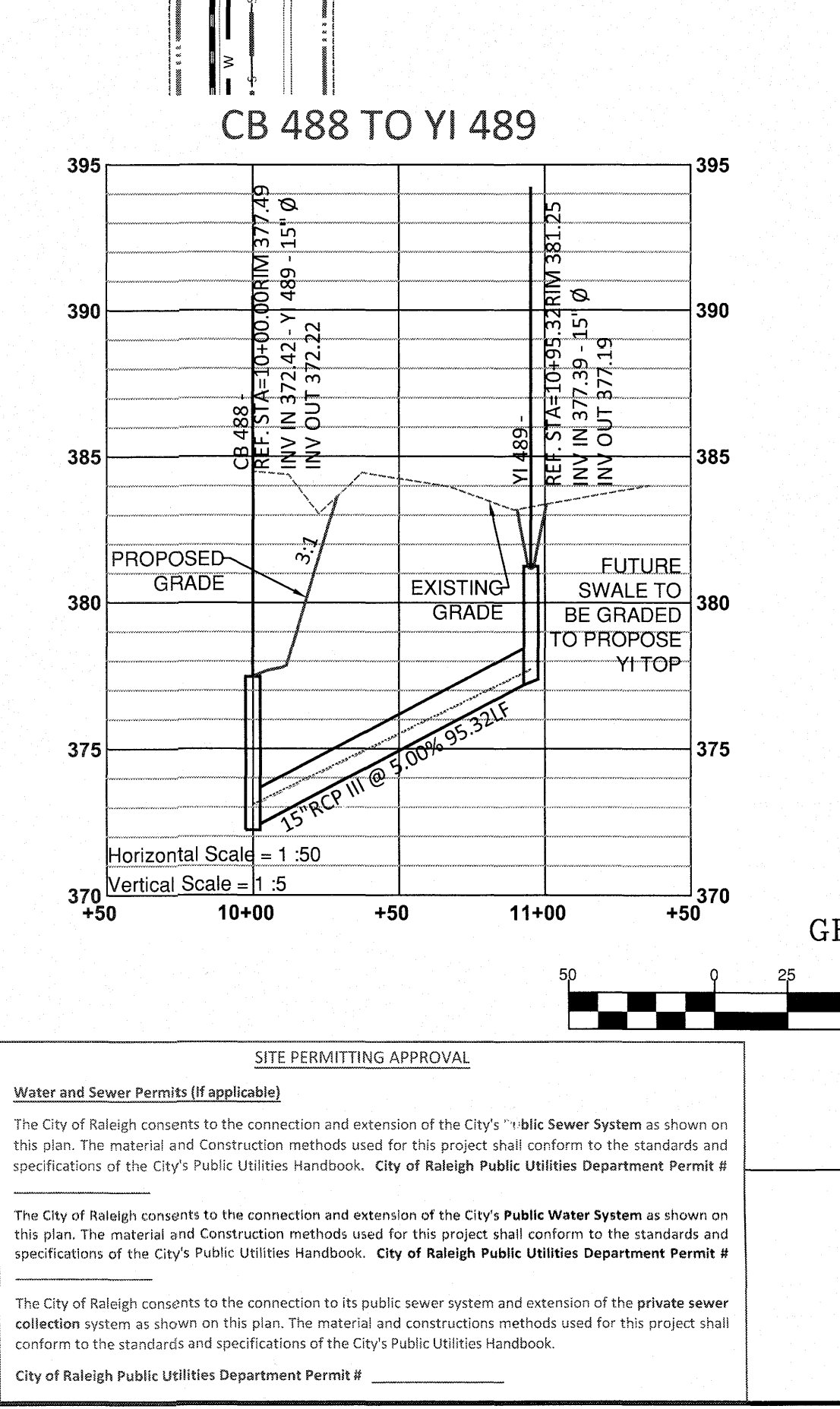
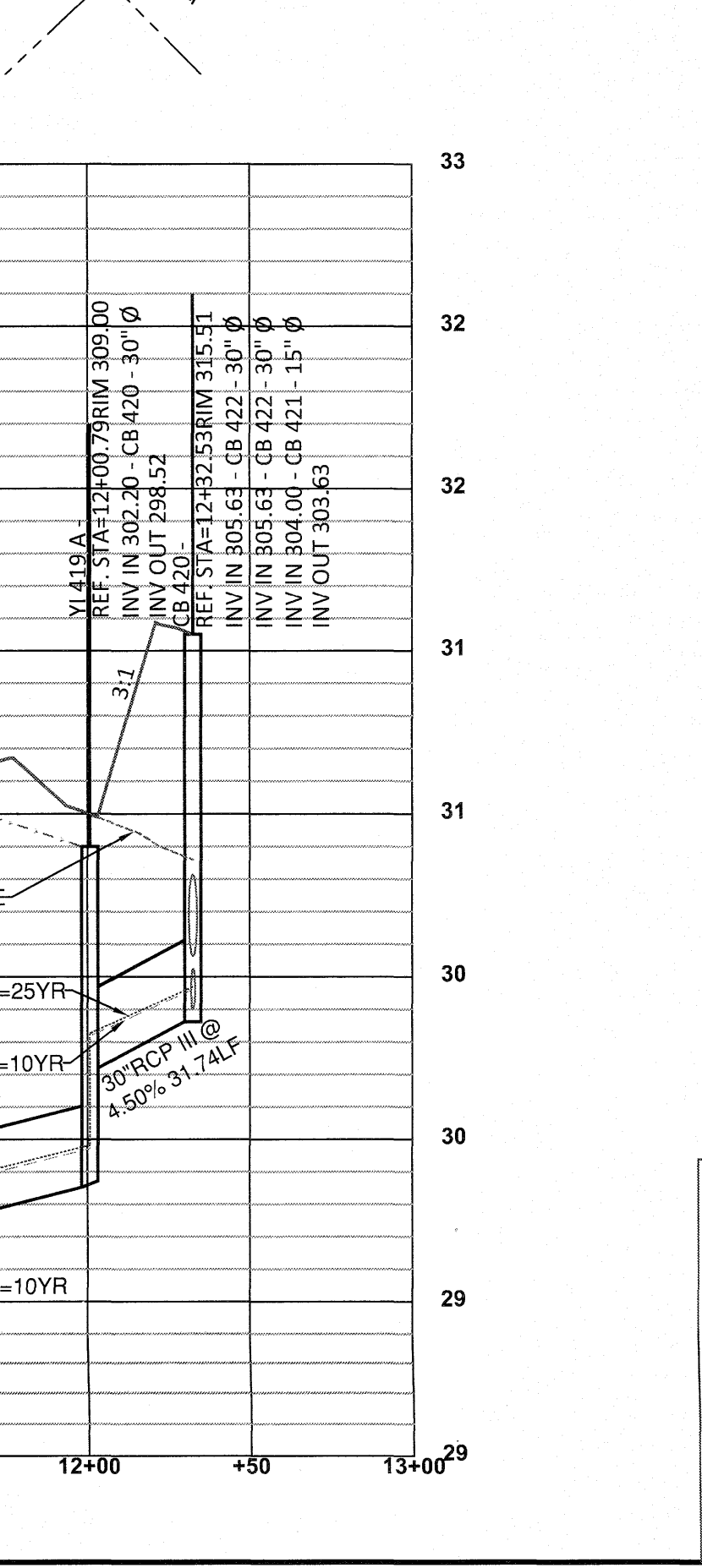
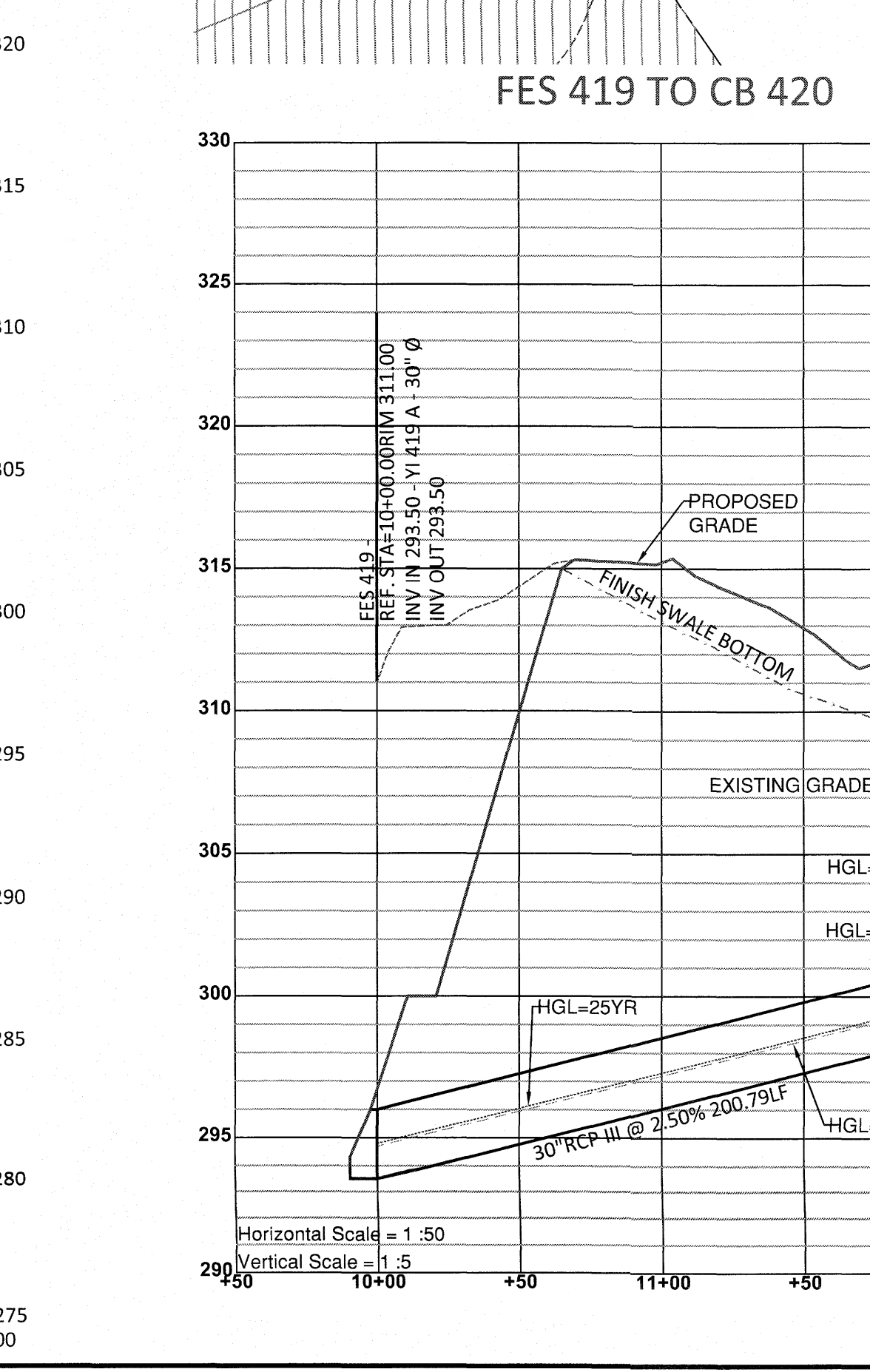
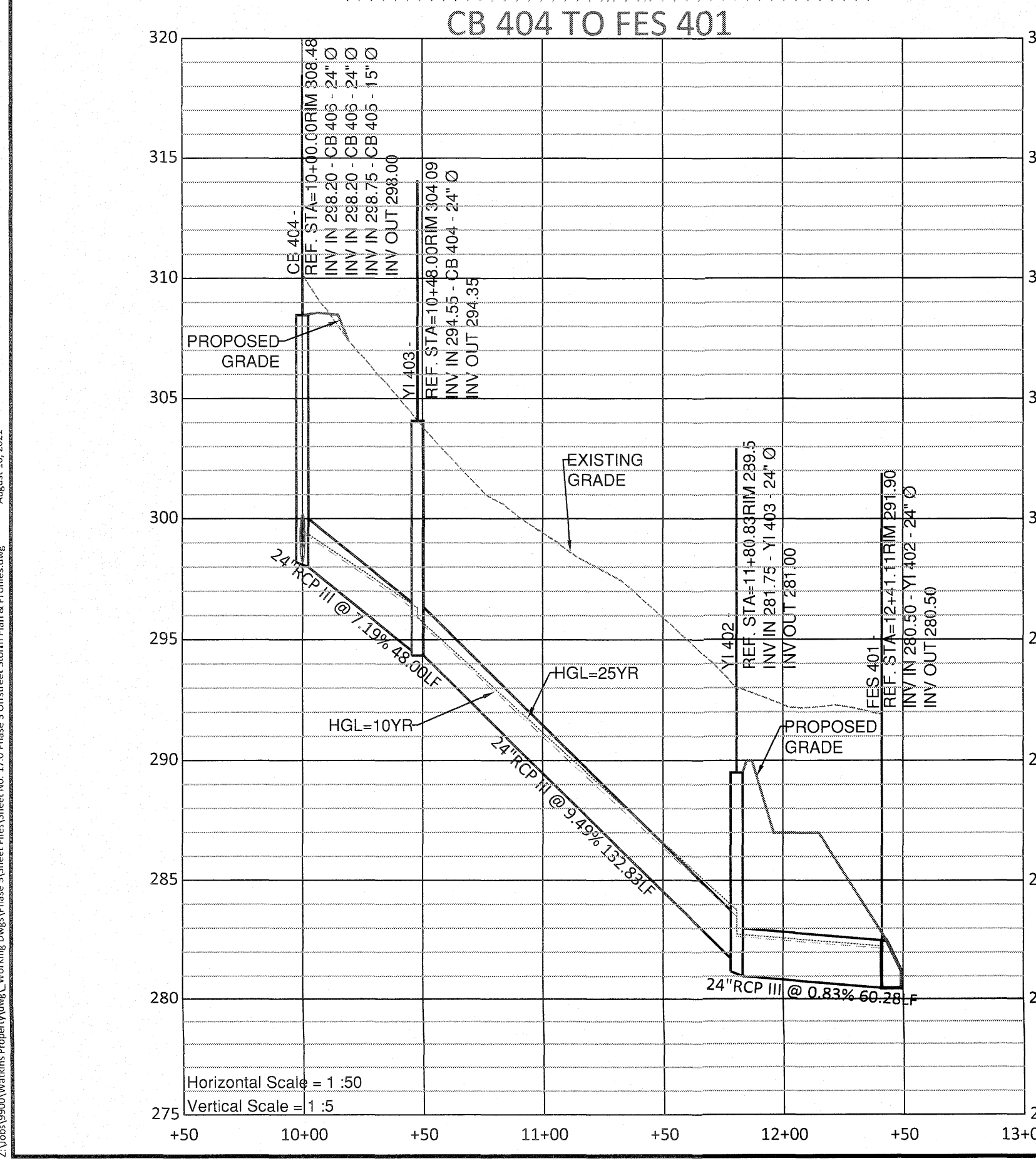
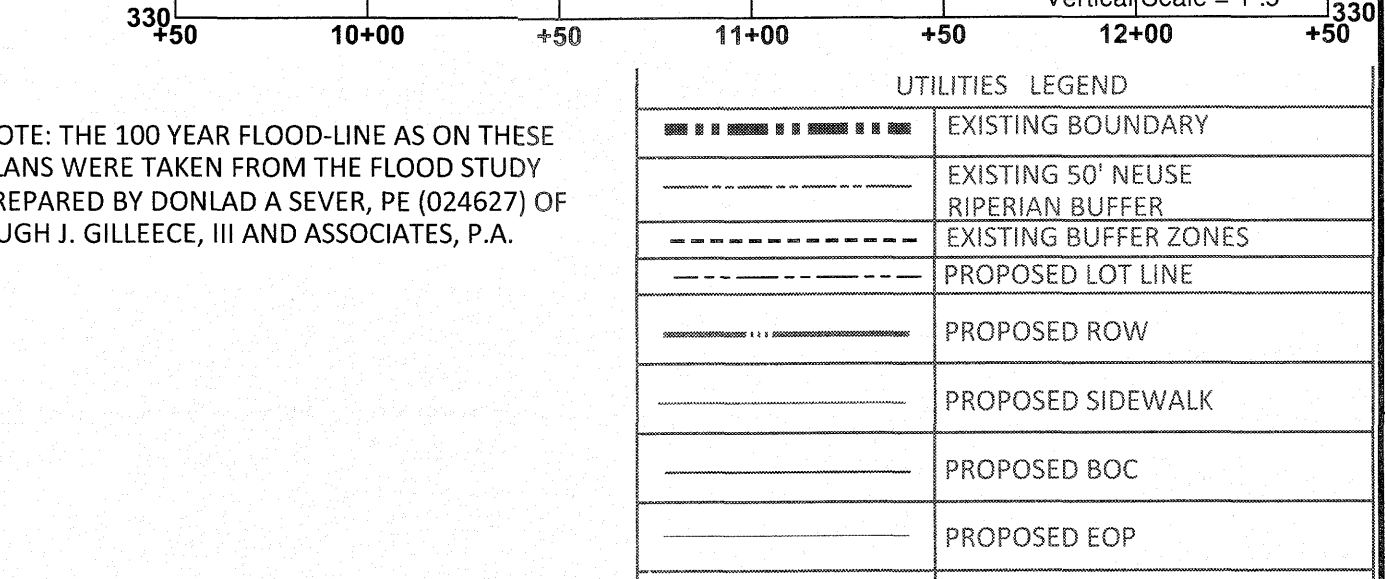
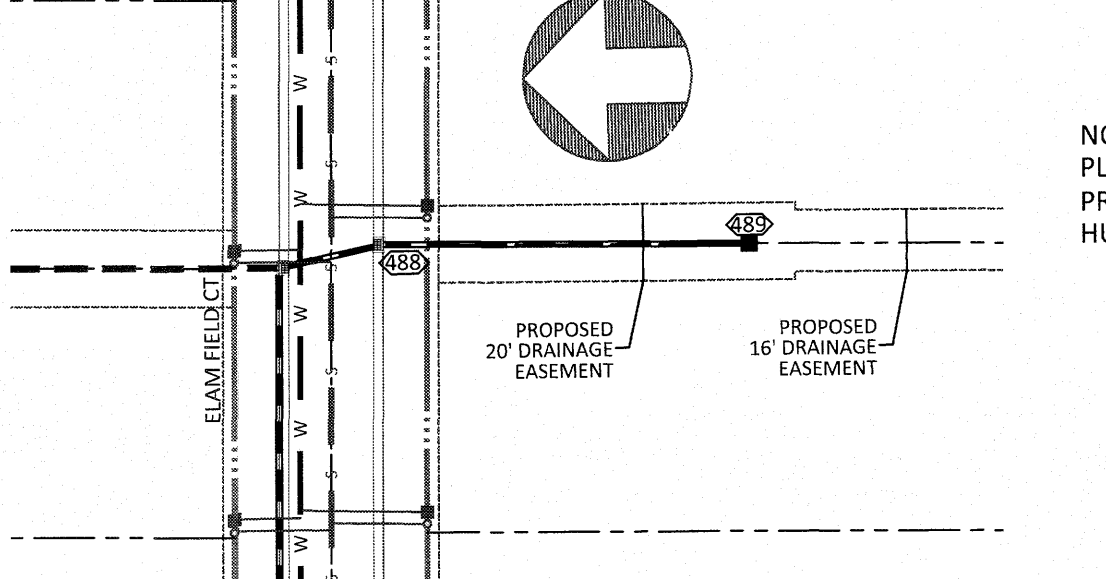
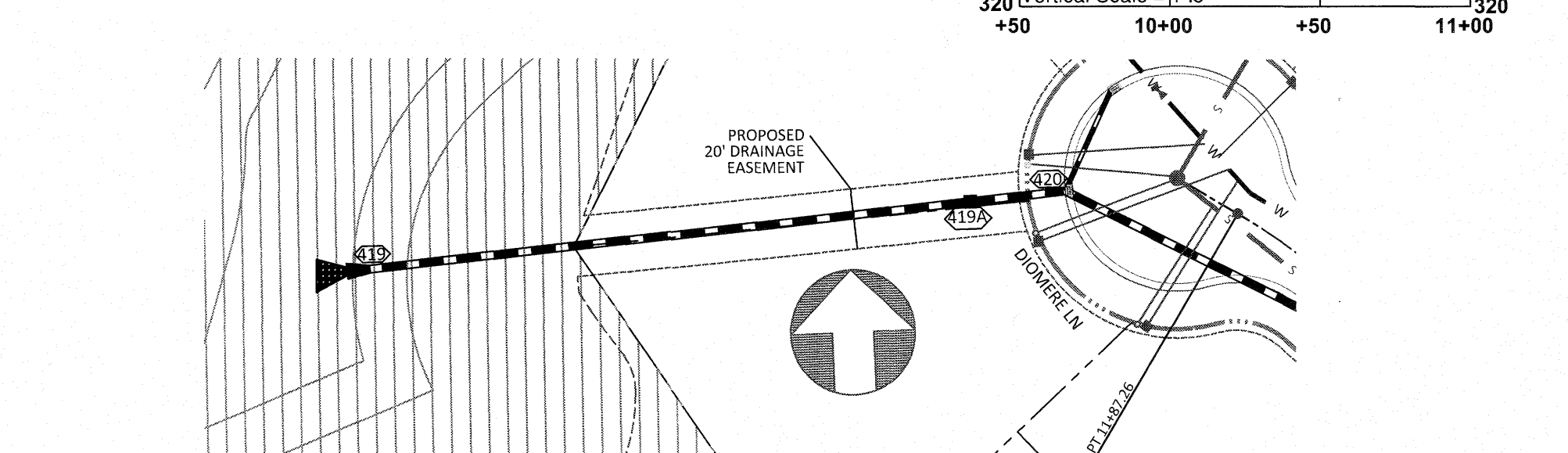
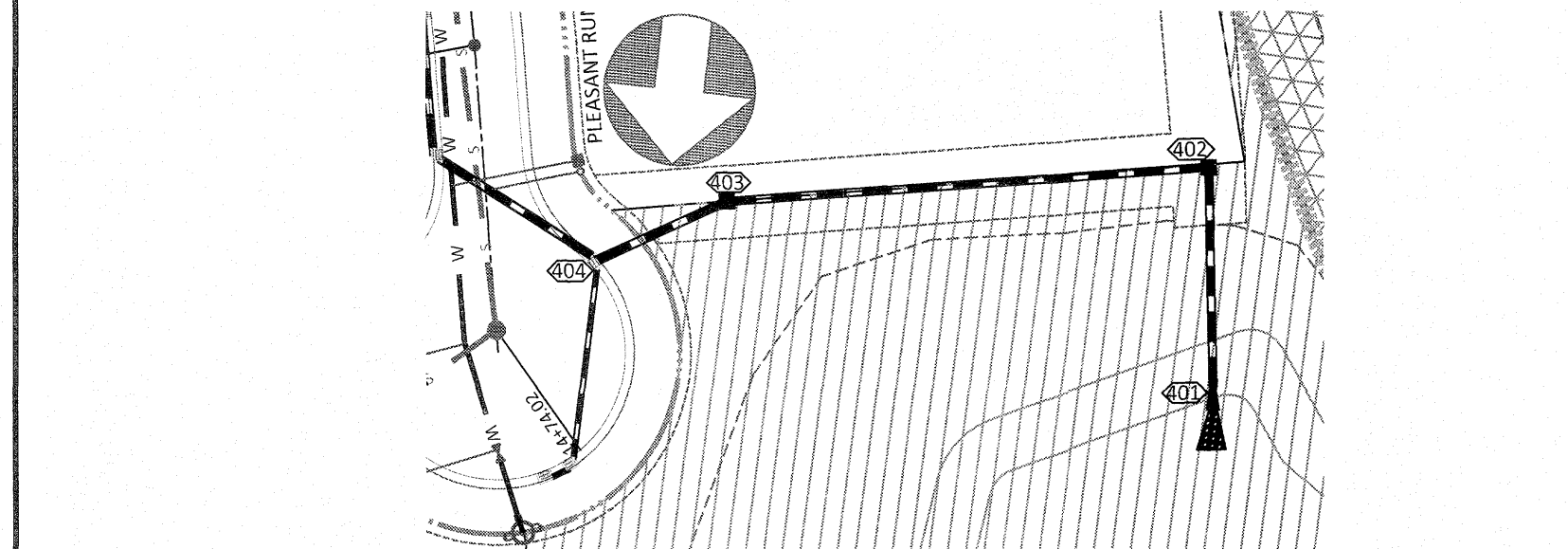
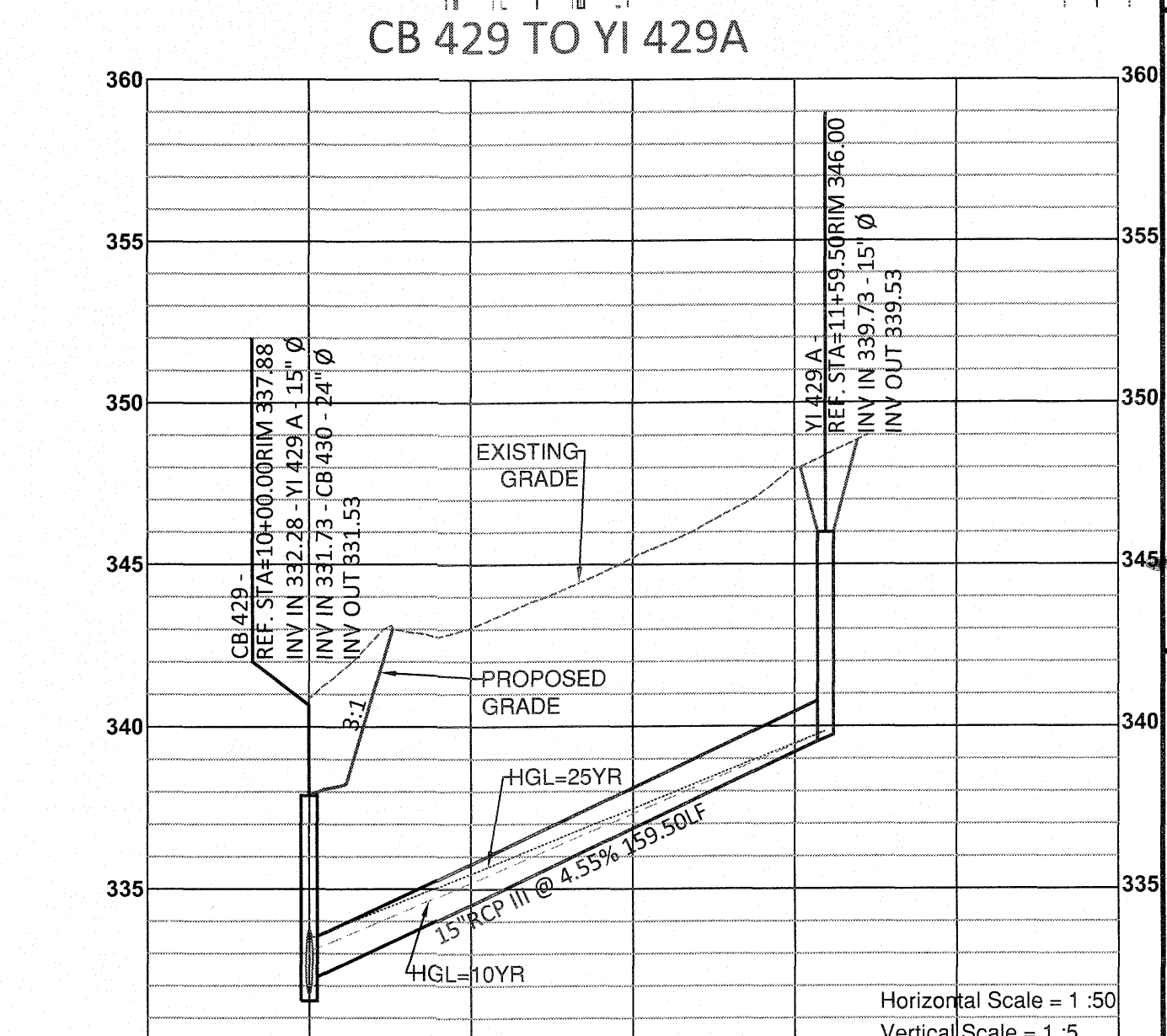
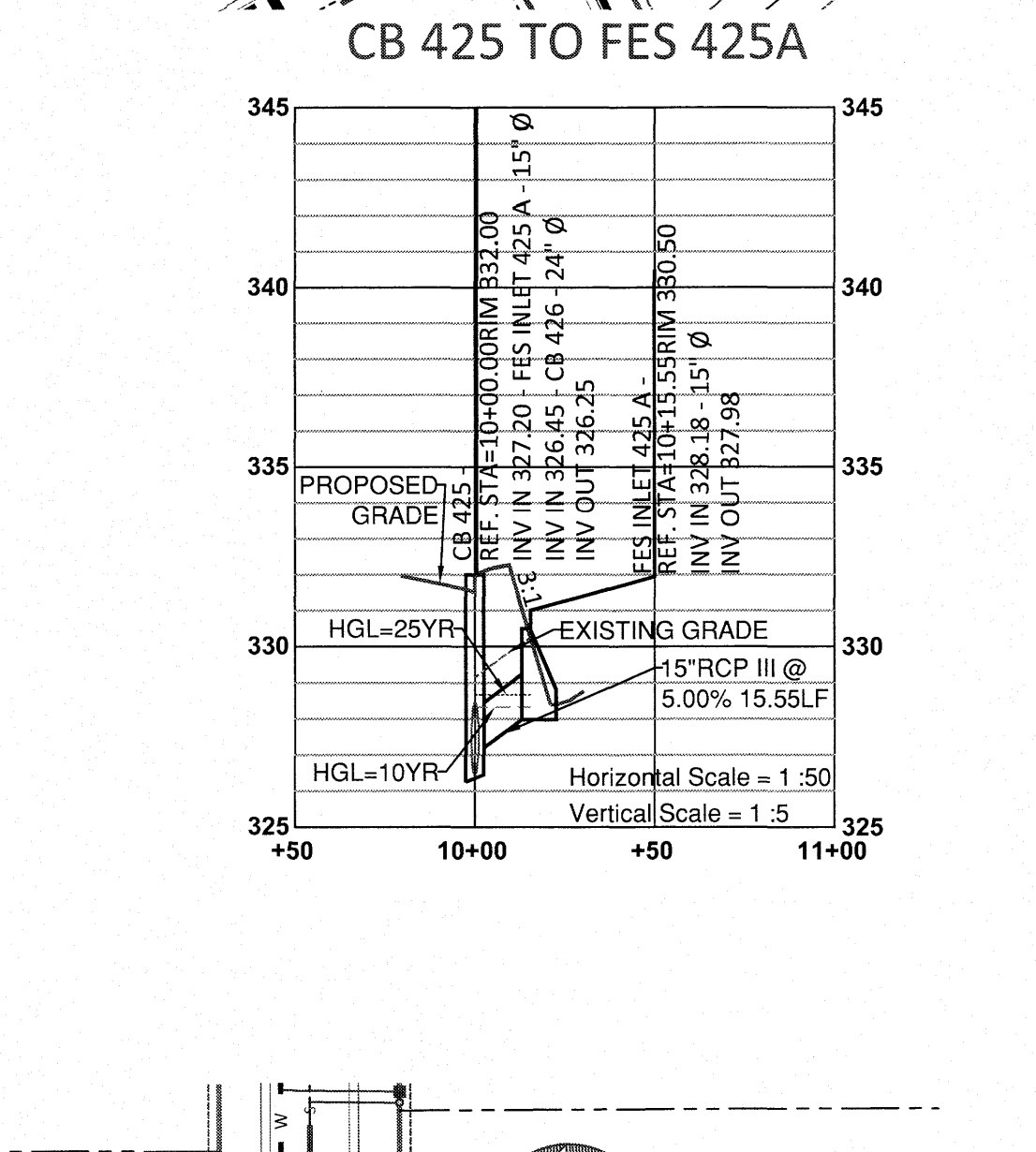
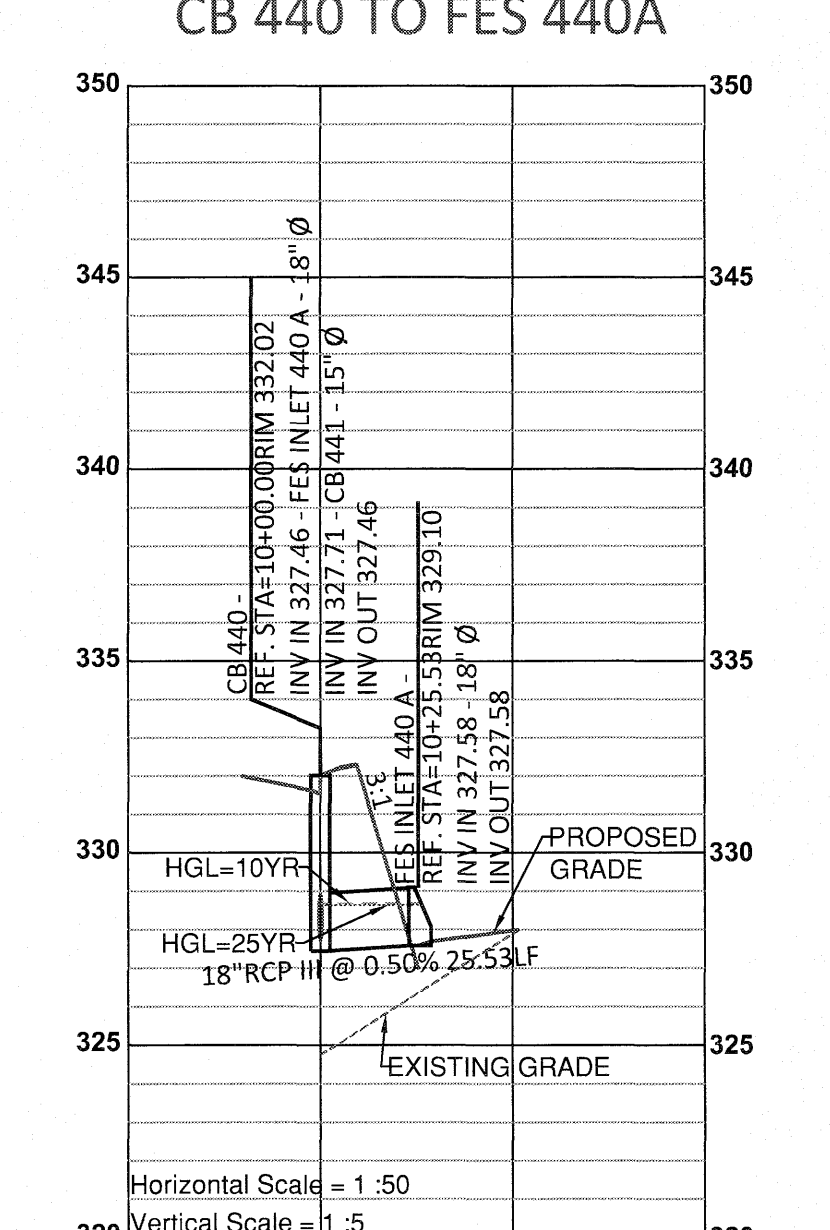
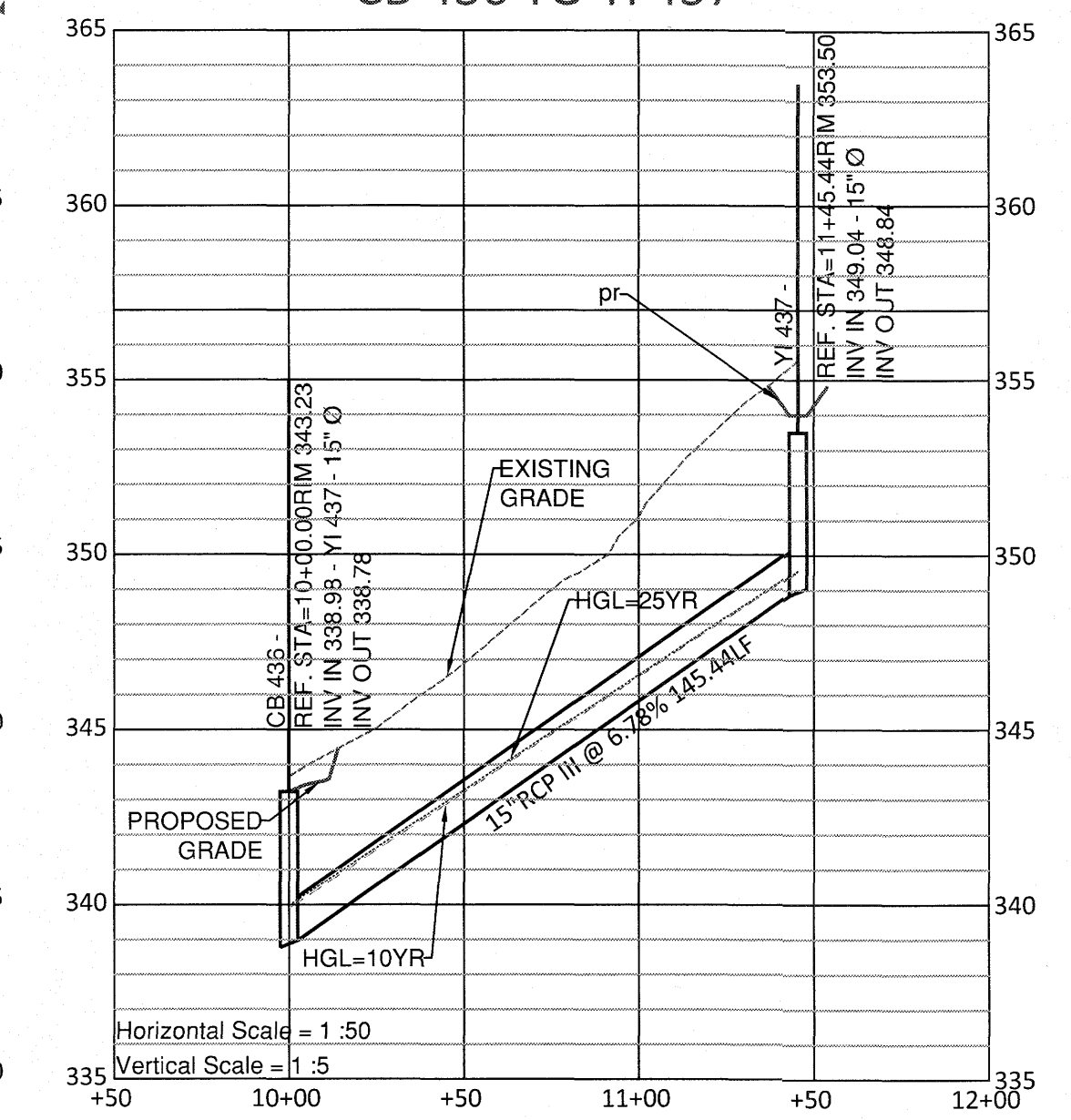
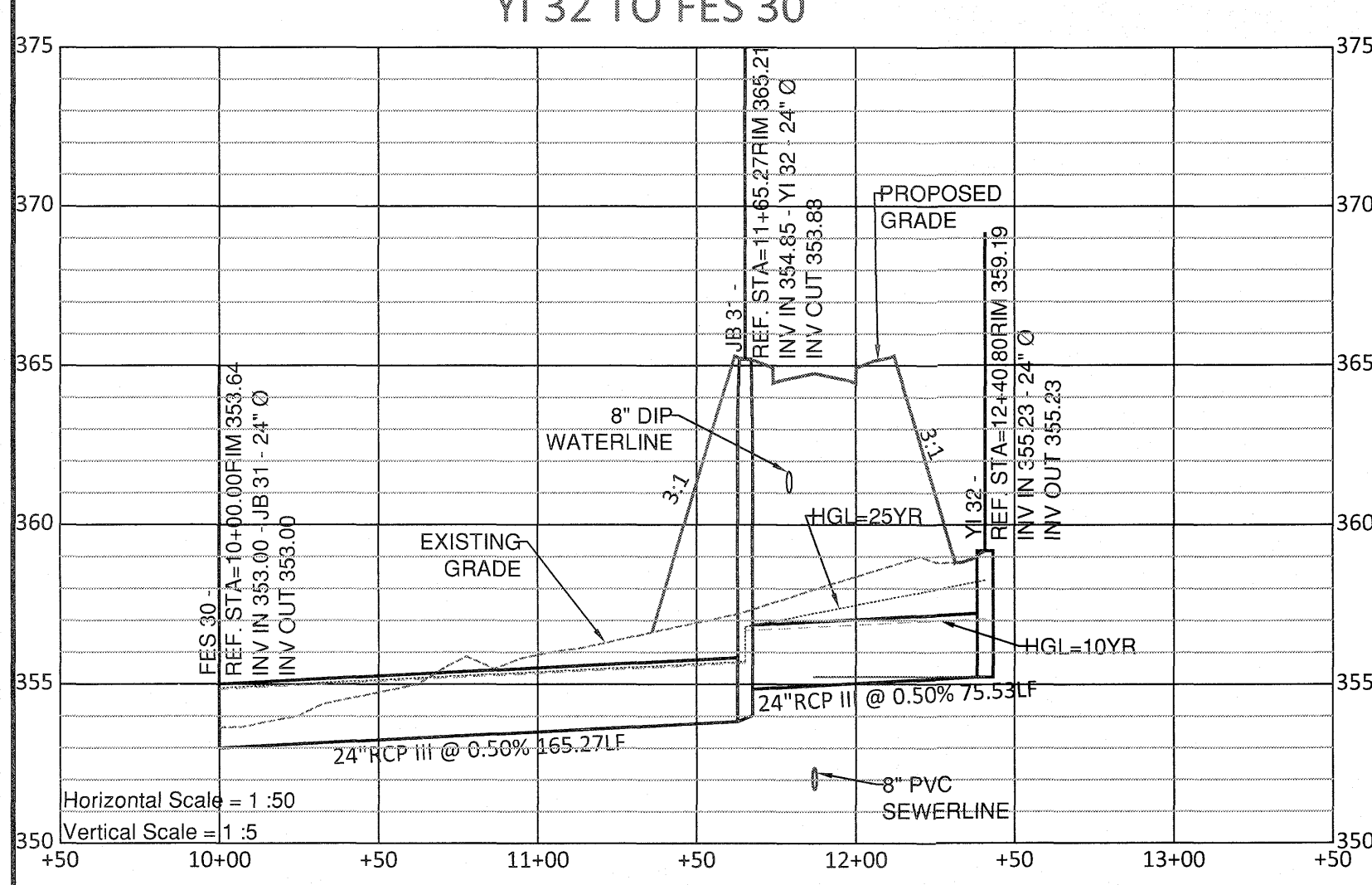
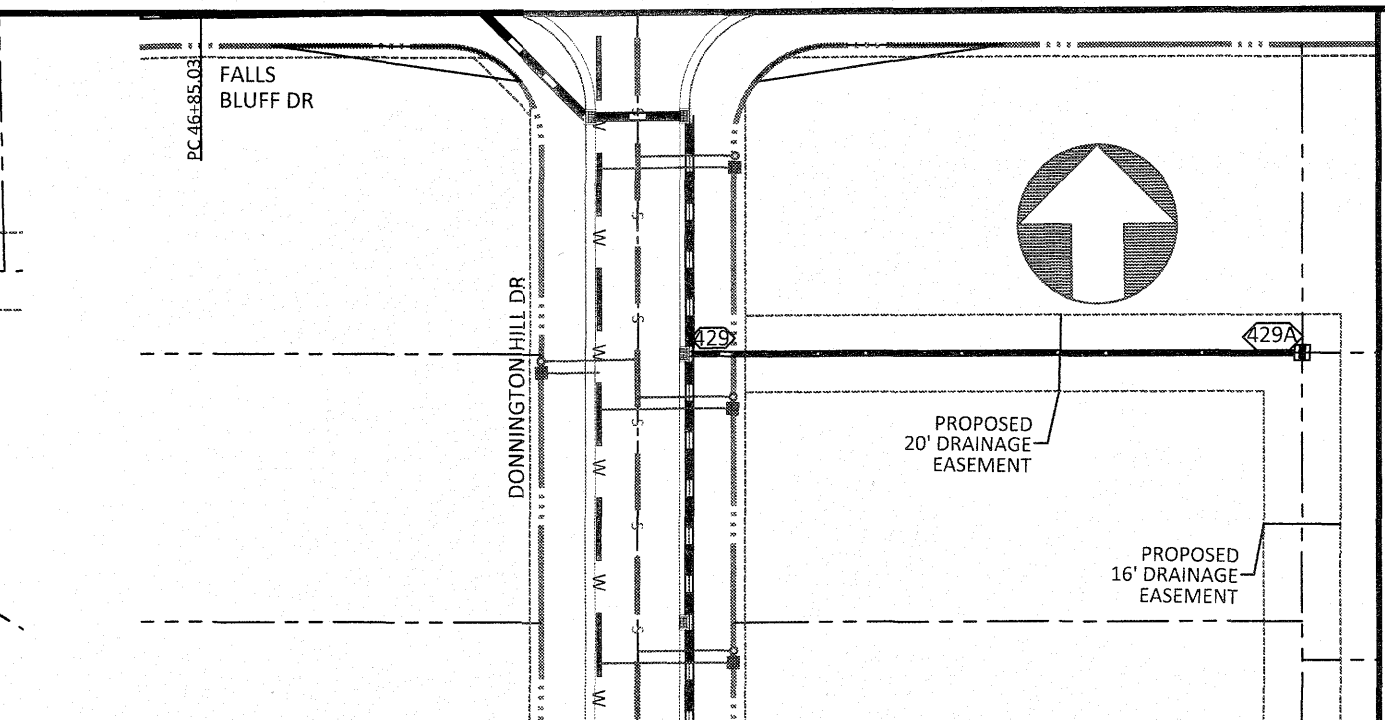
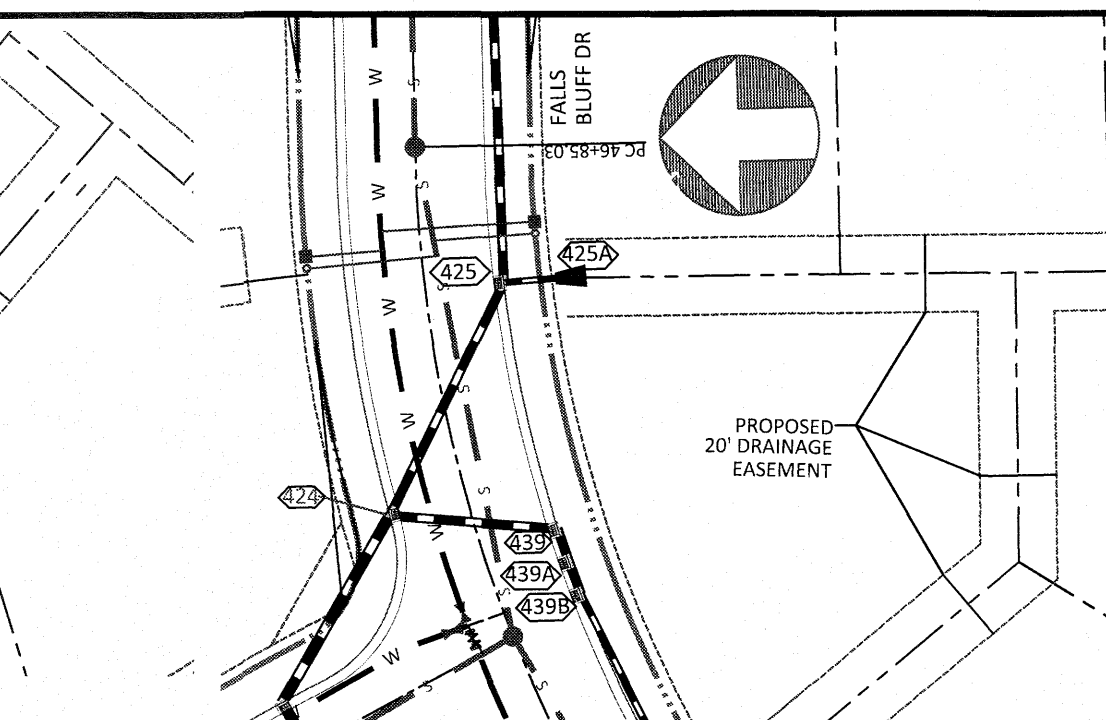
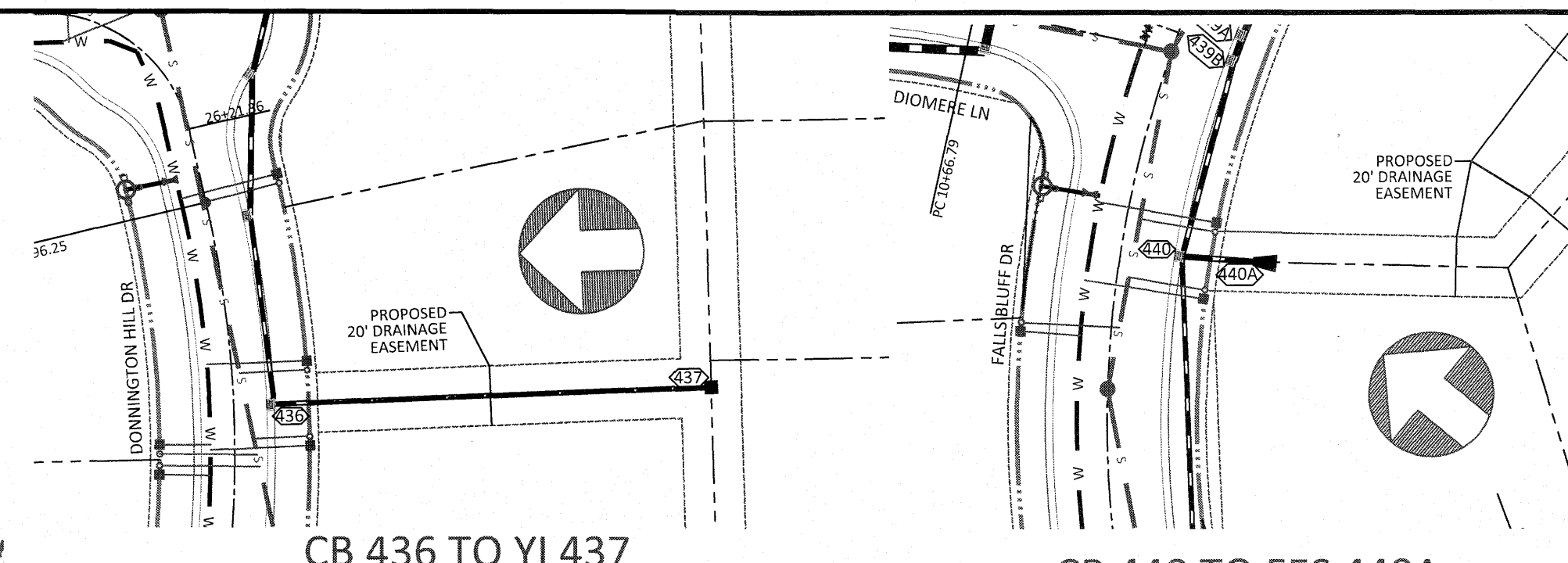
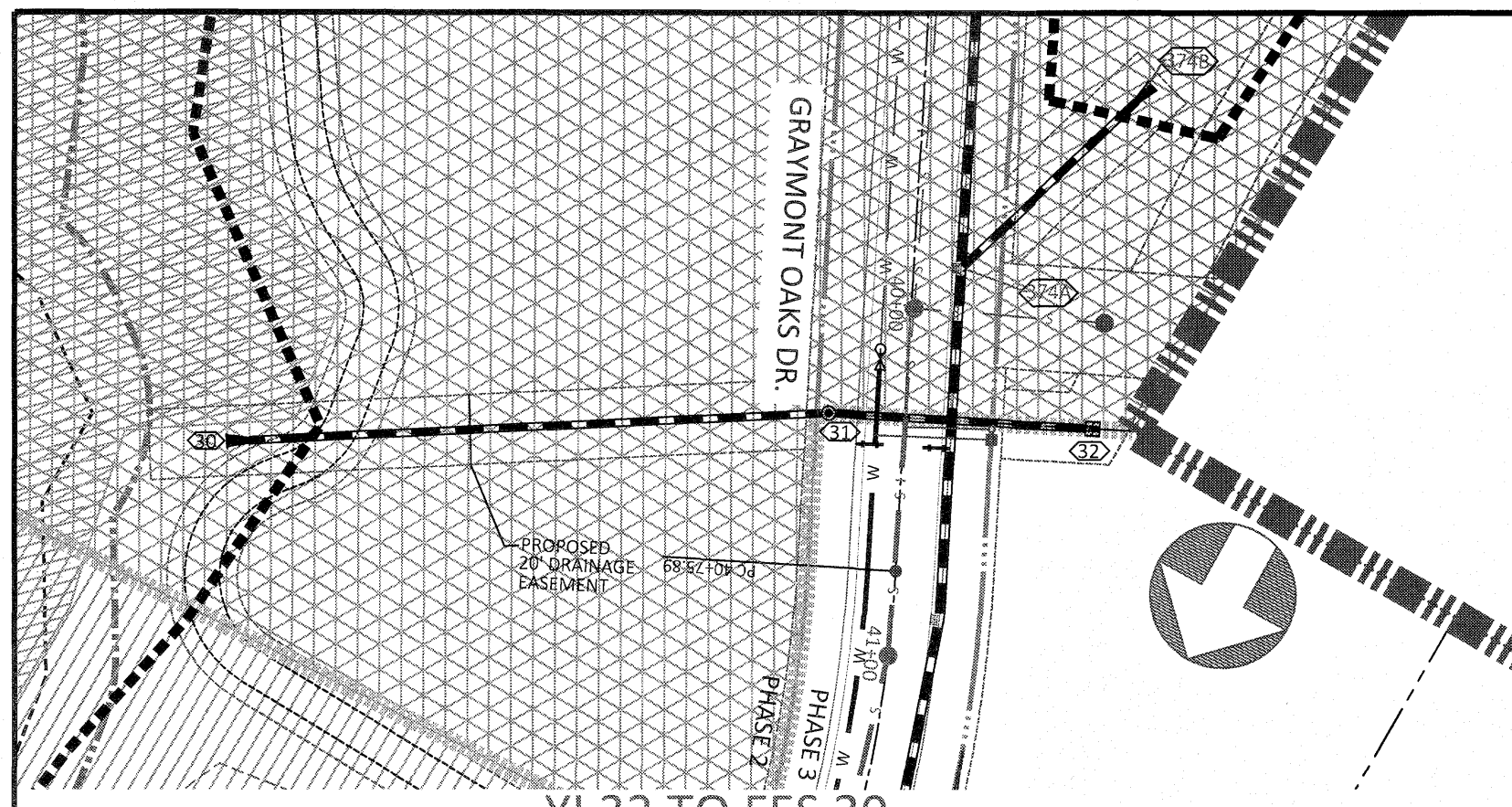
SHEET NO.: 16.0

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Raleigh Water Review Officer \_\_\_\_\_

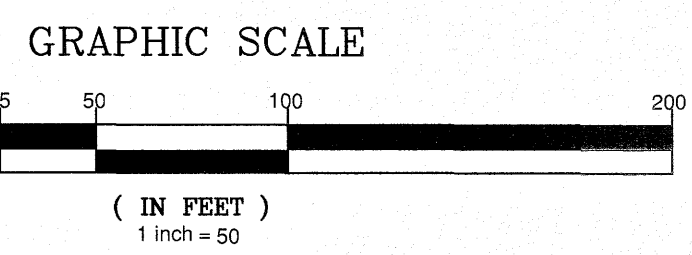






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UTILITIES LEGEND	
	EXISTING BOUNDARY
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	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASILINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
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	PROPOSED FLARED END SECTION
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	PROPOSED SEWER SERVICE
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	OPEN SPACE
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	EXISTING PHASING
	100 YEAR FLOOD EASEMENT

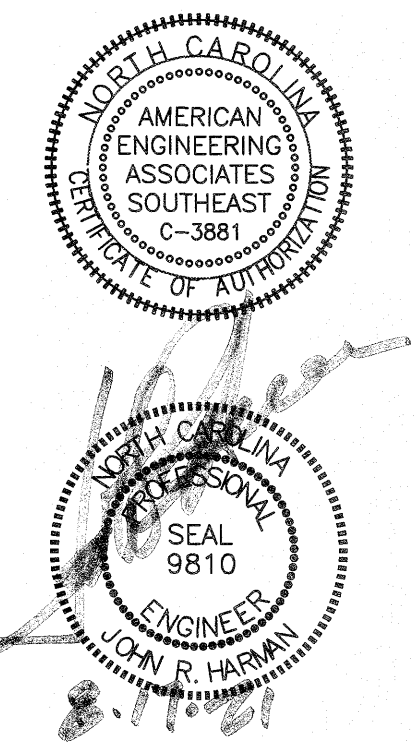
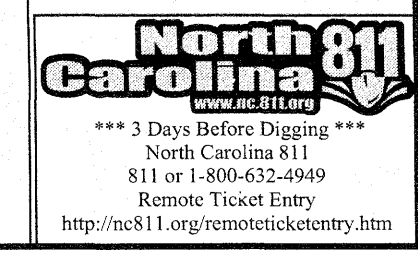


**SITE PERMITTING APPROVAL**  
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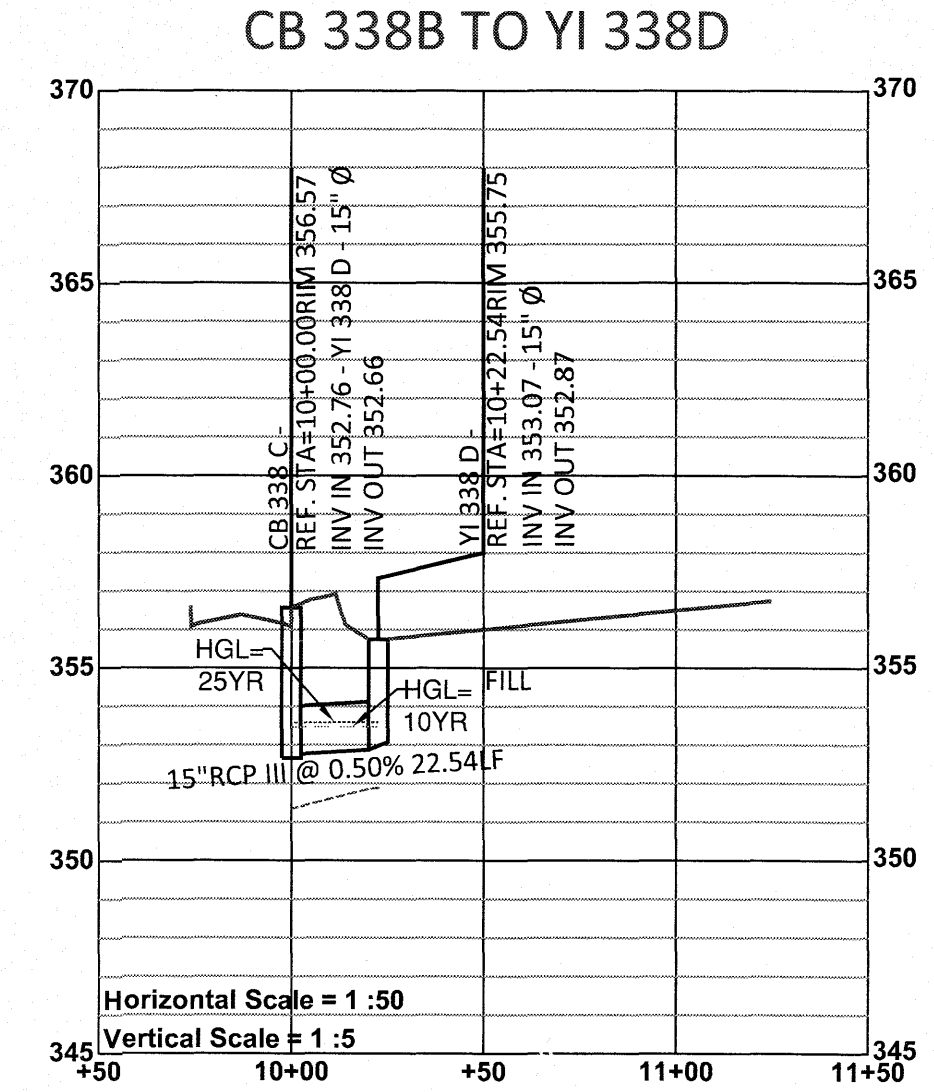
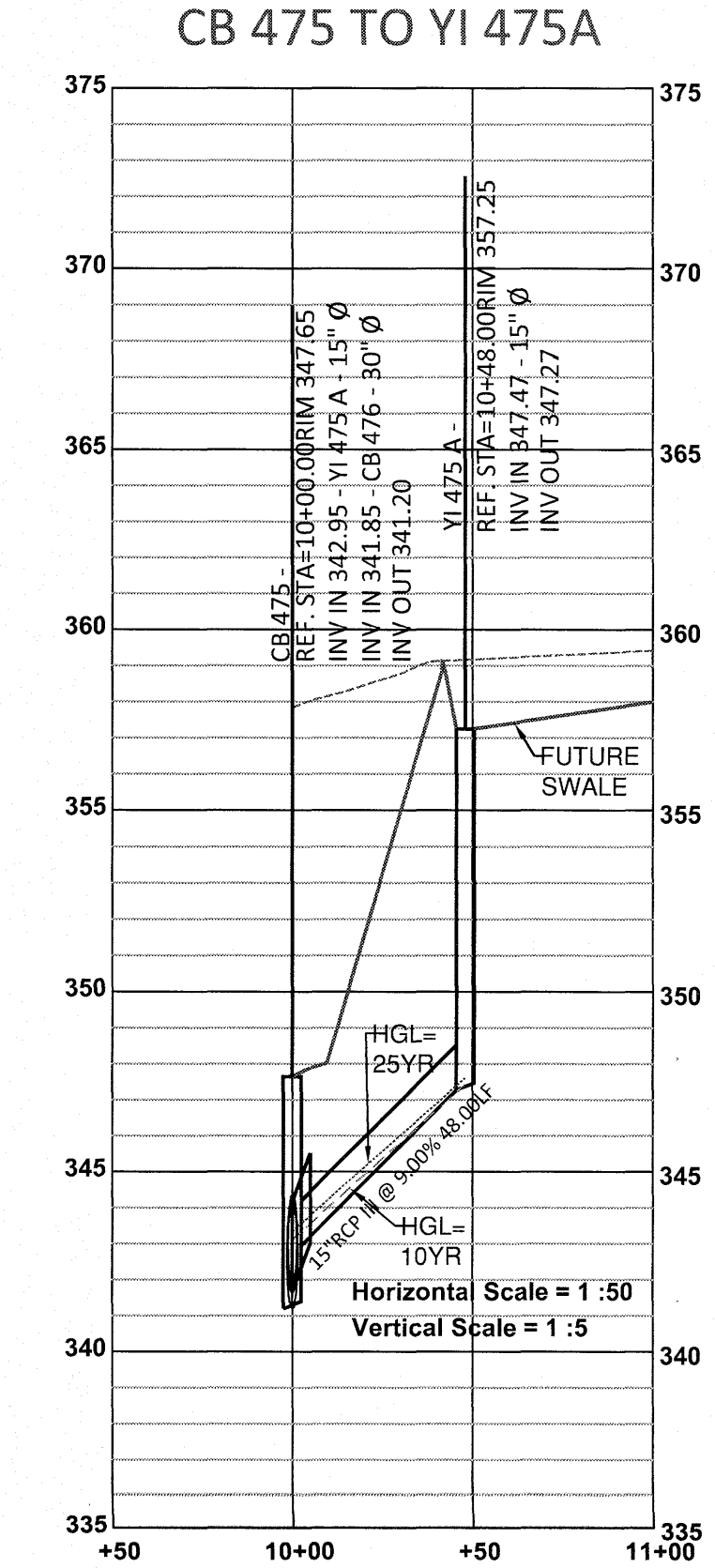
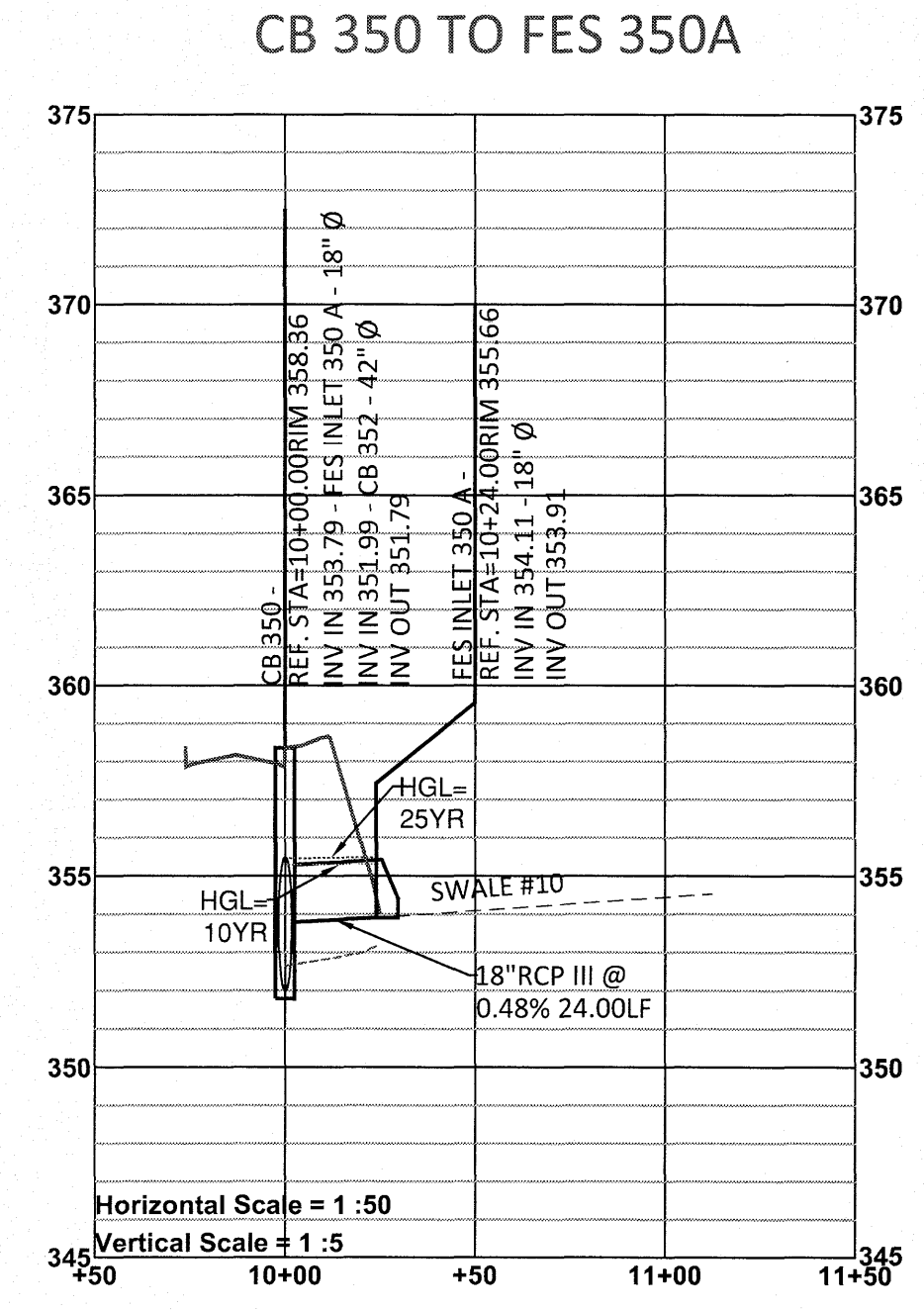
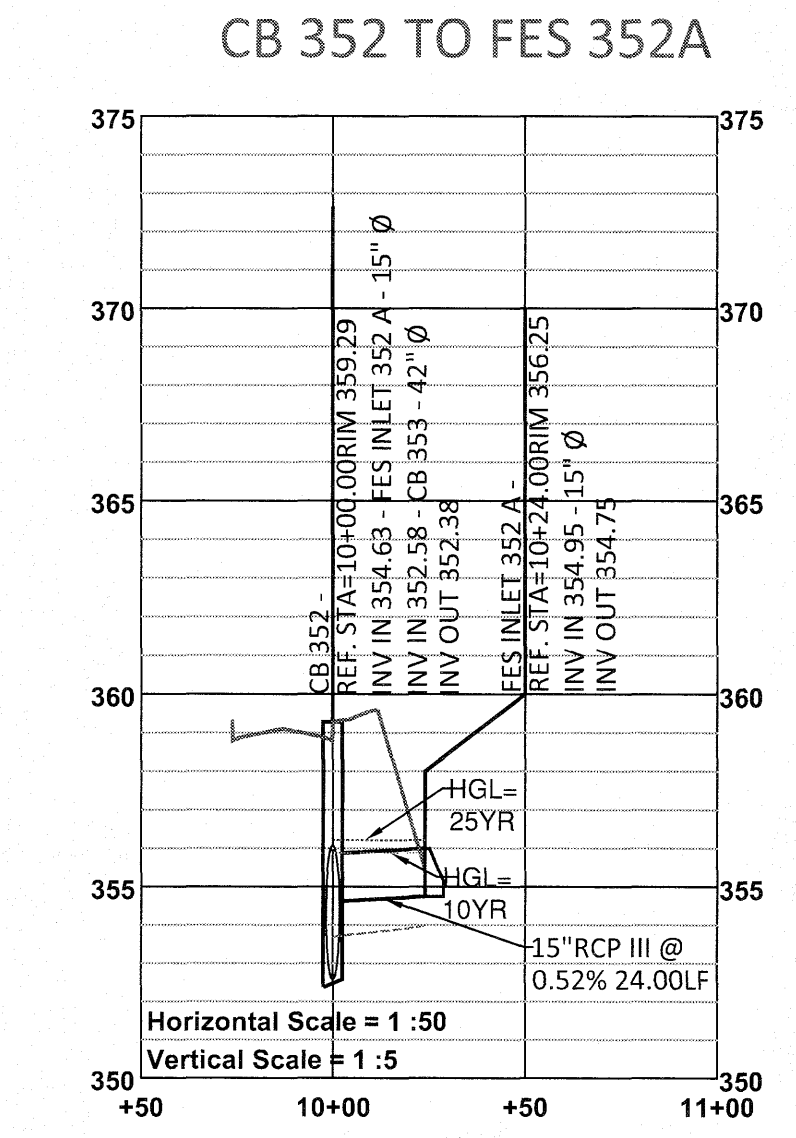
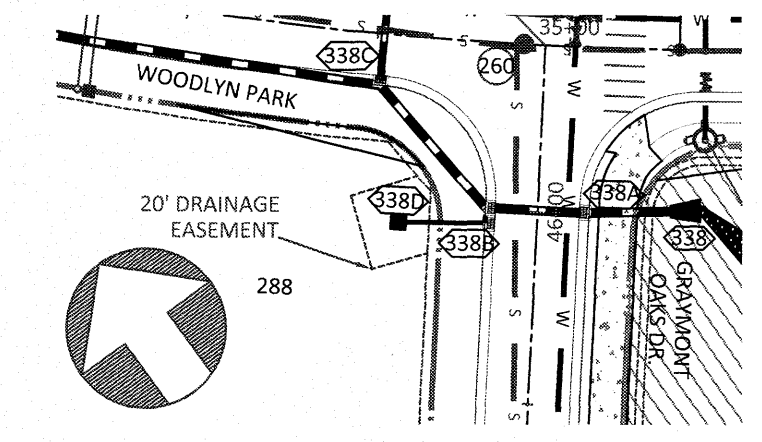
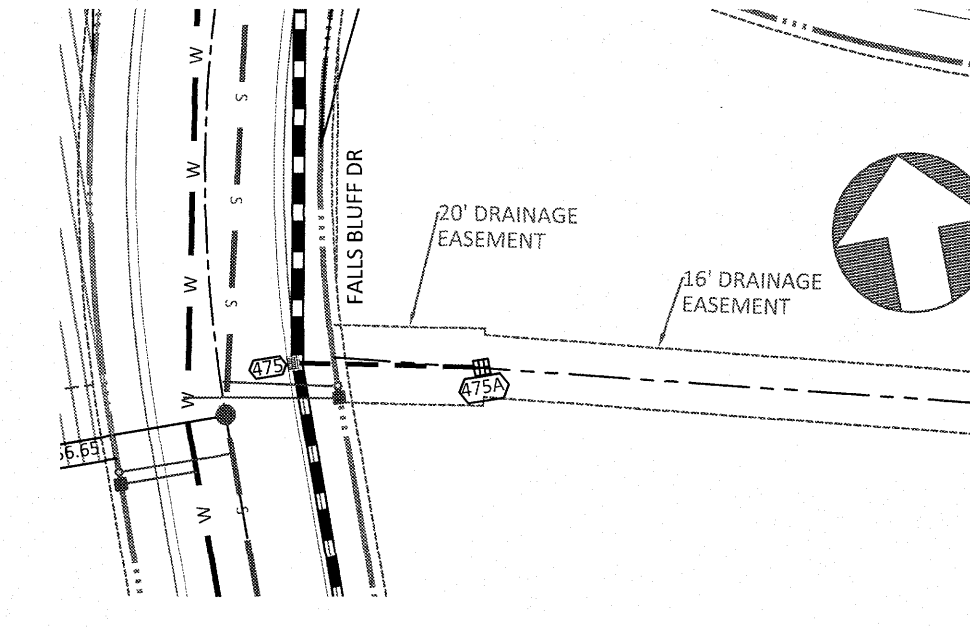
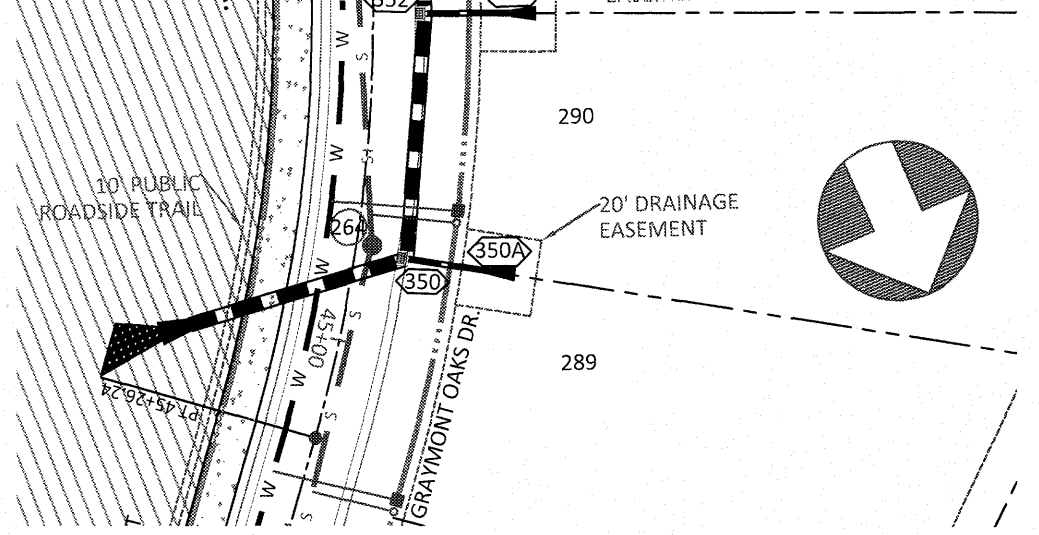
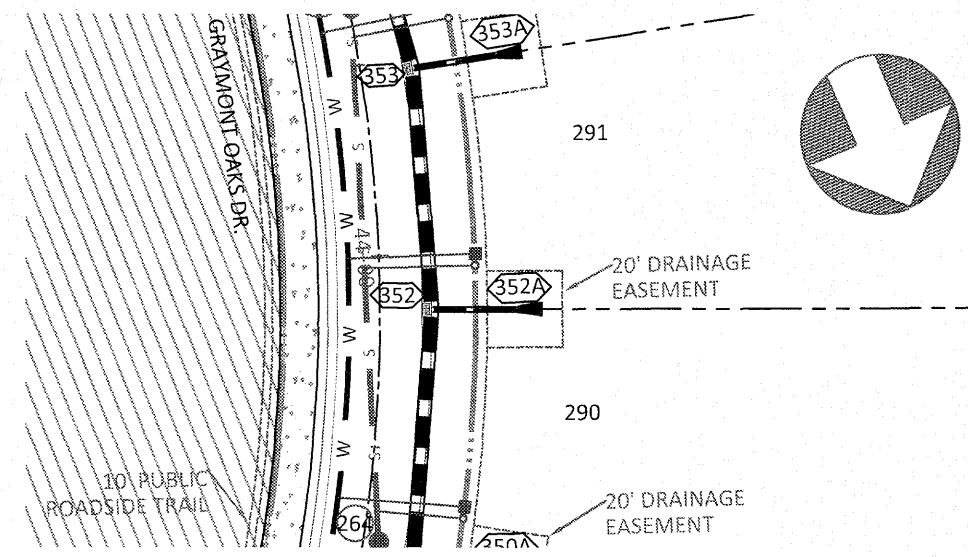
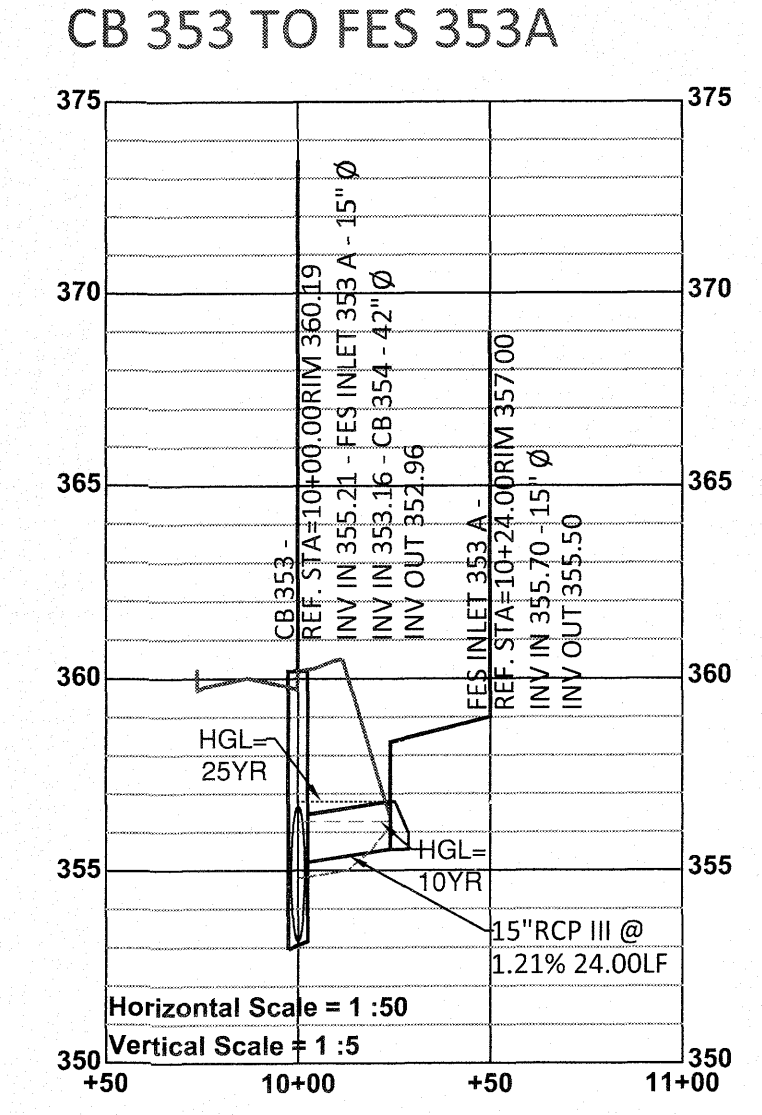
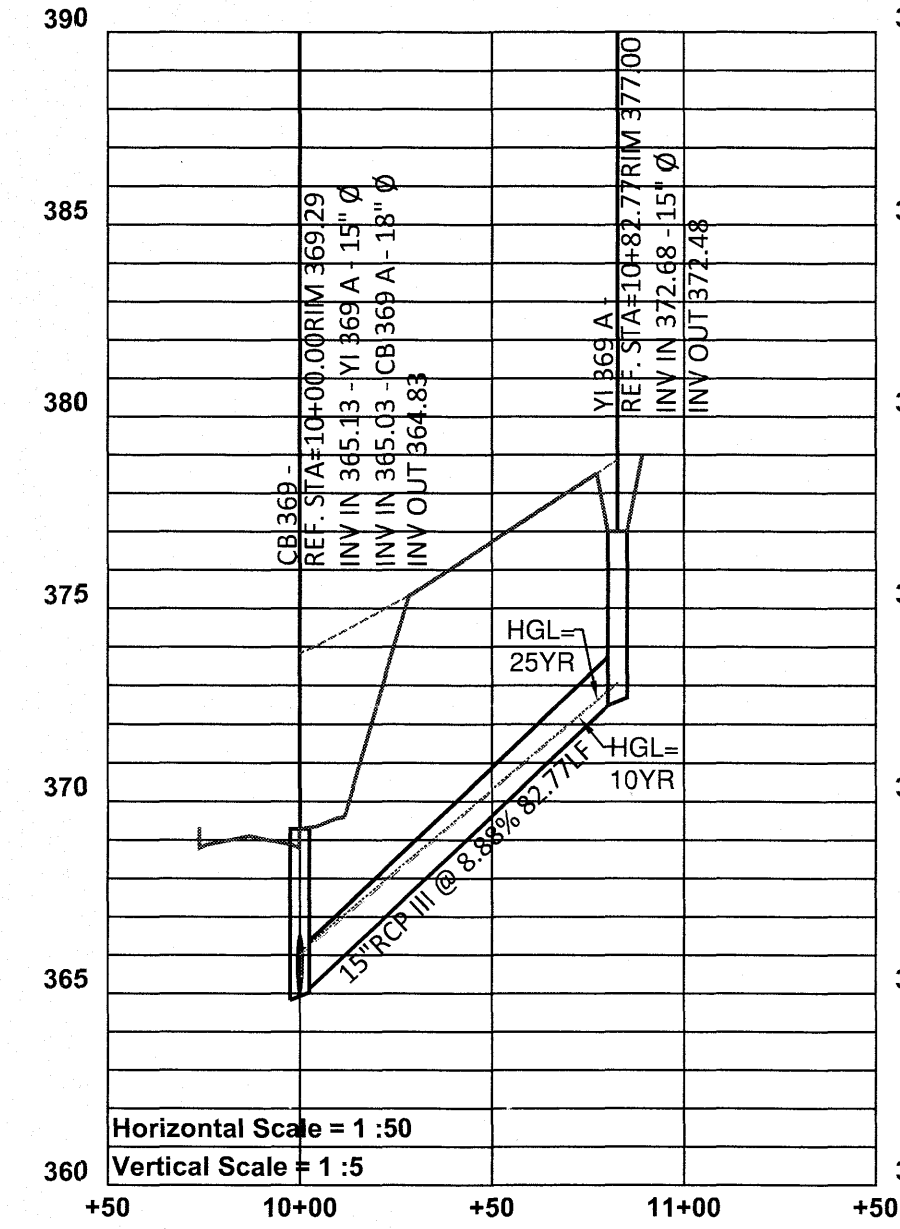
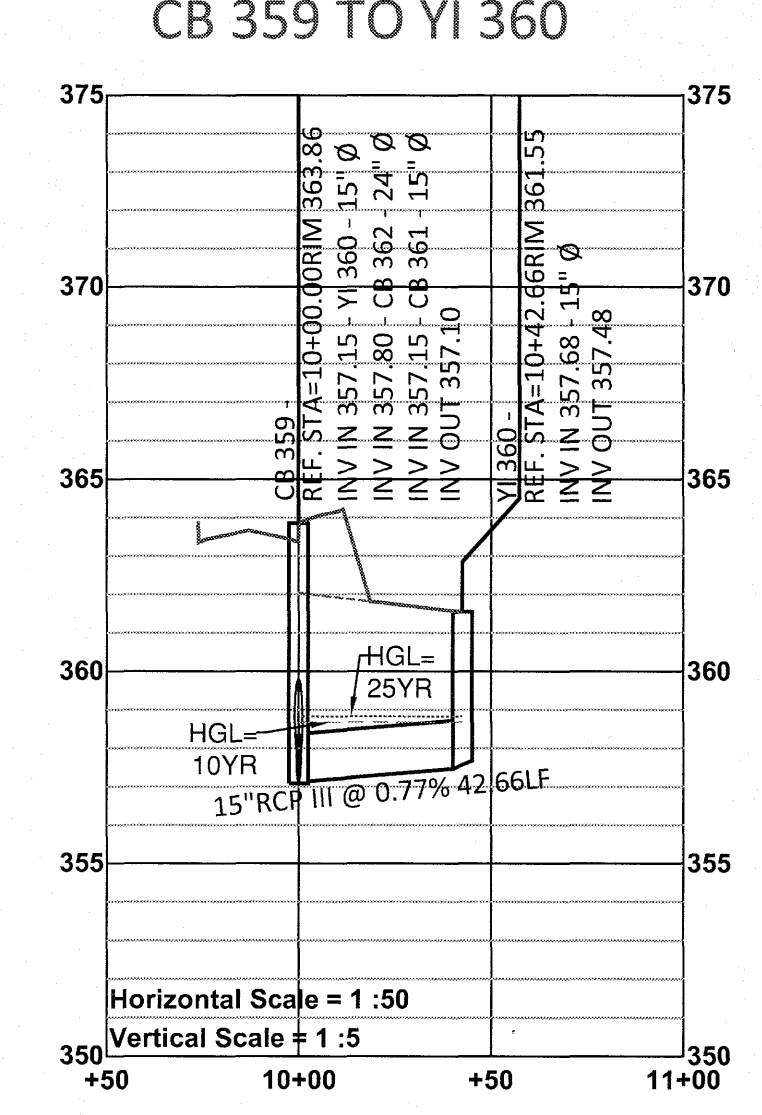
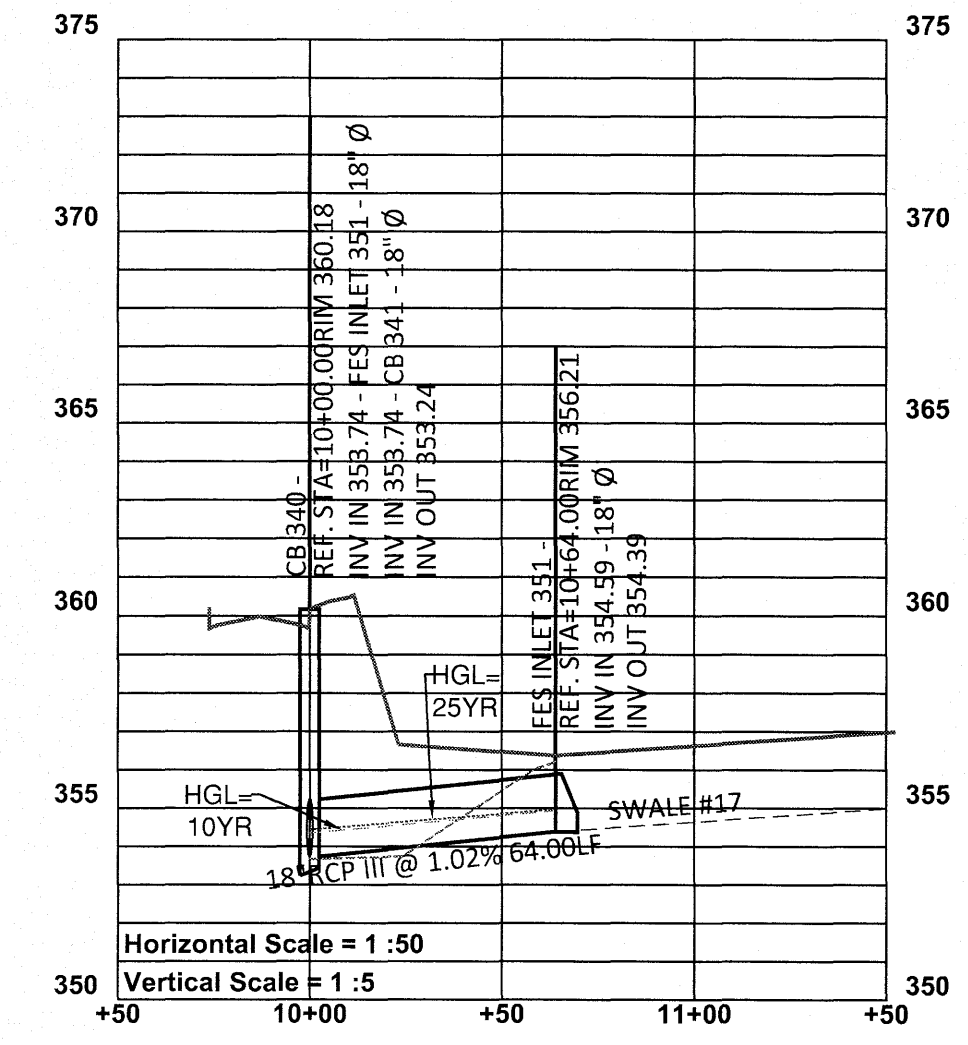
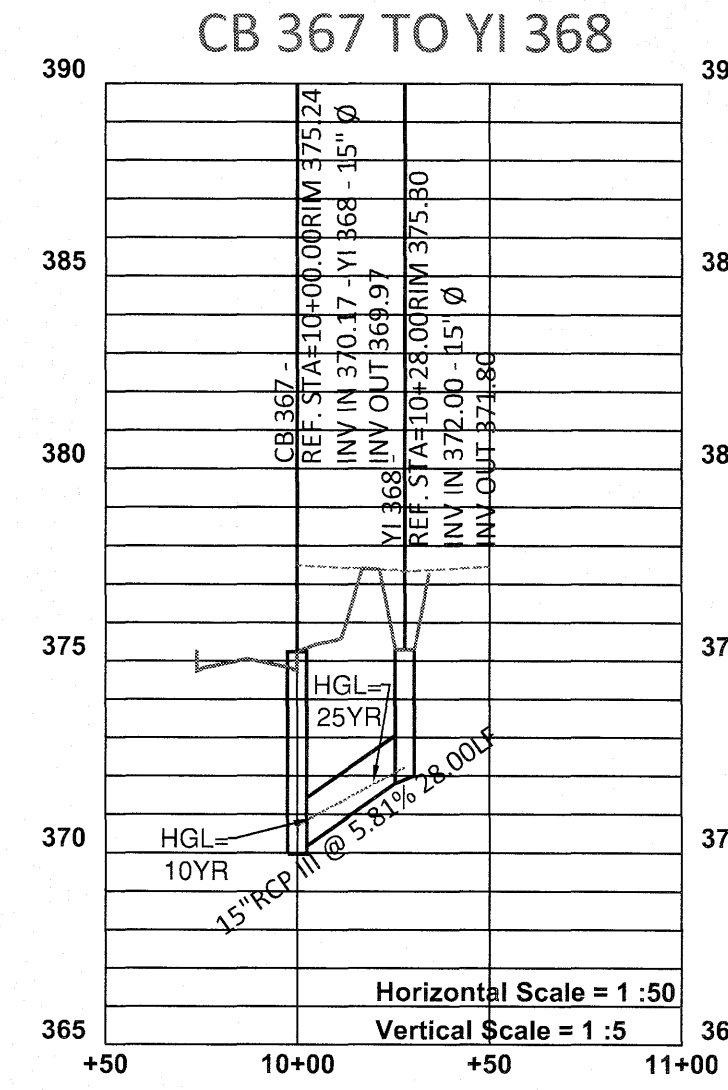
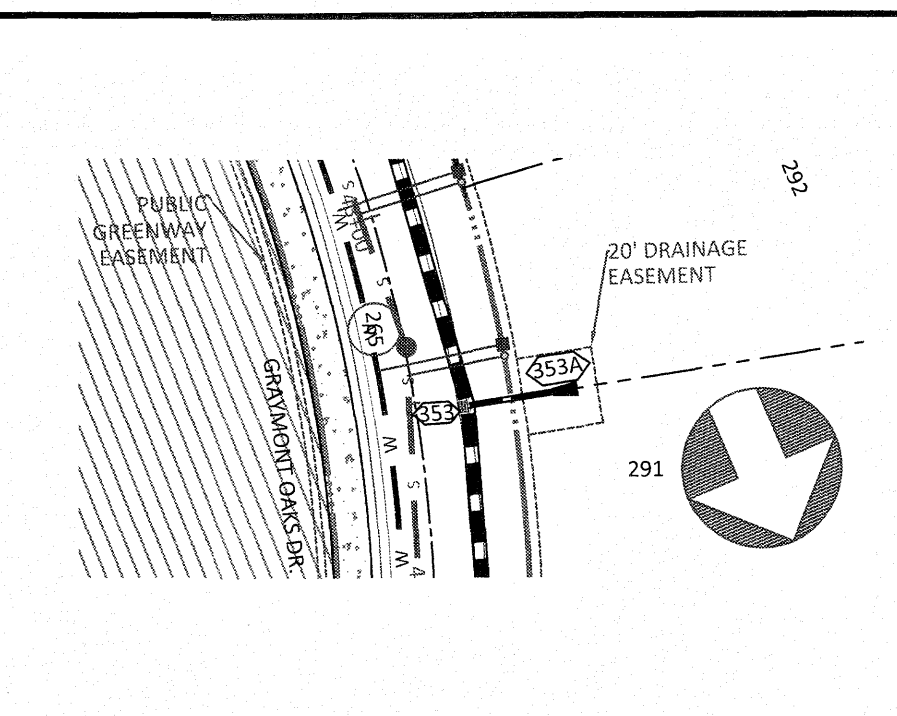
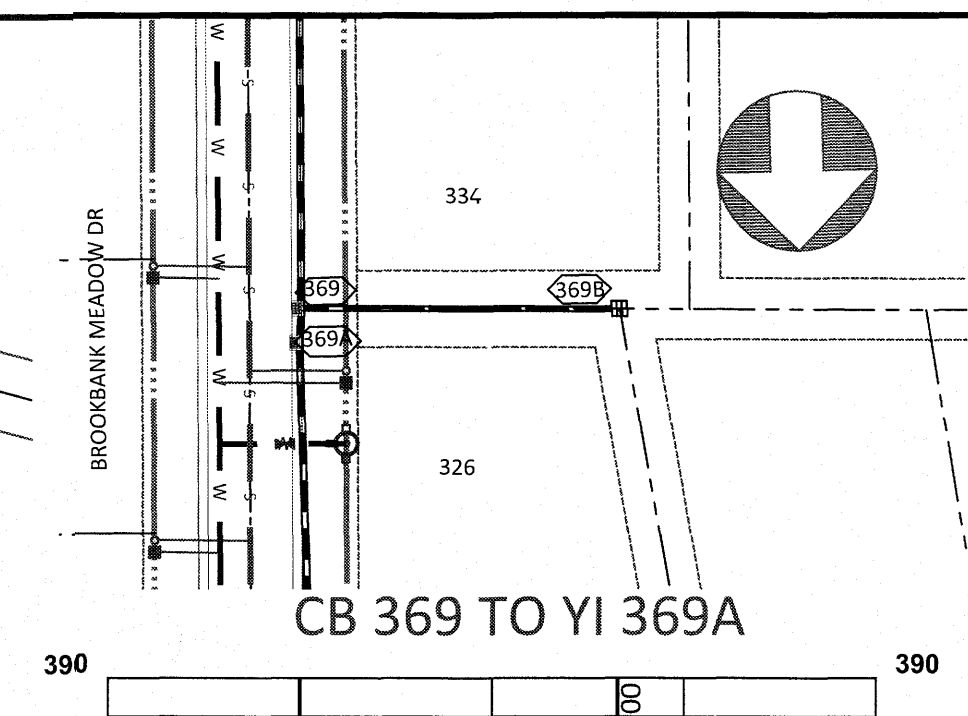
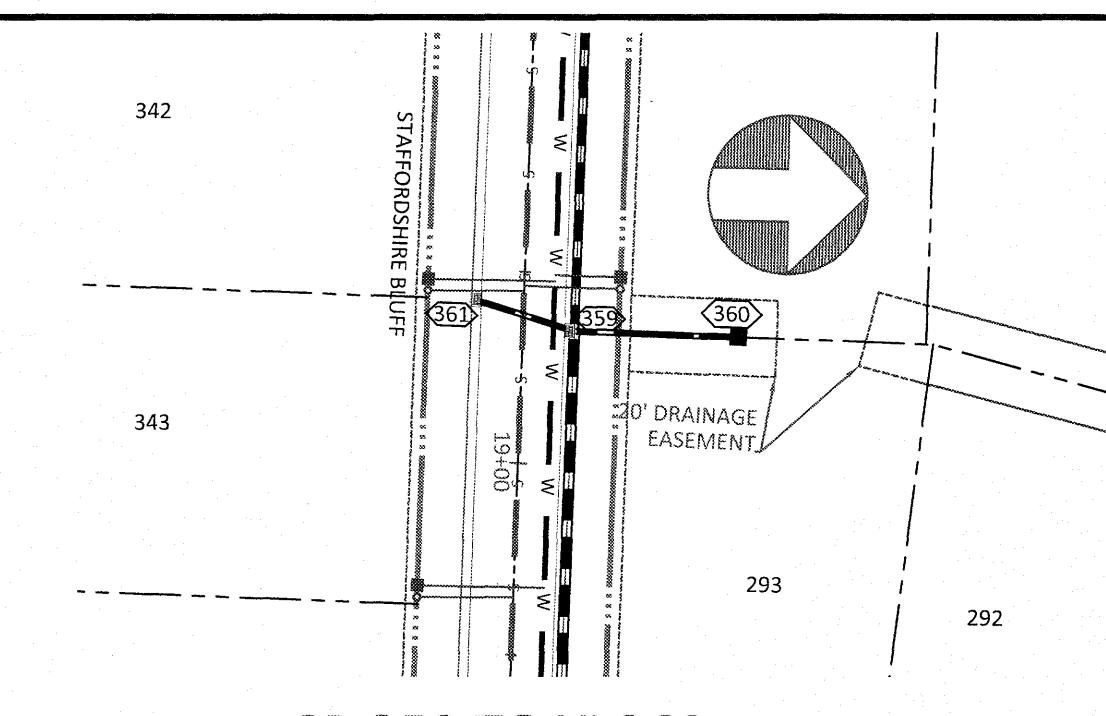
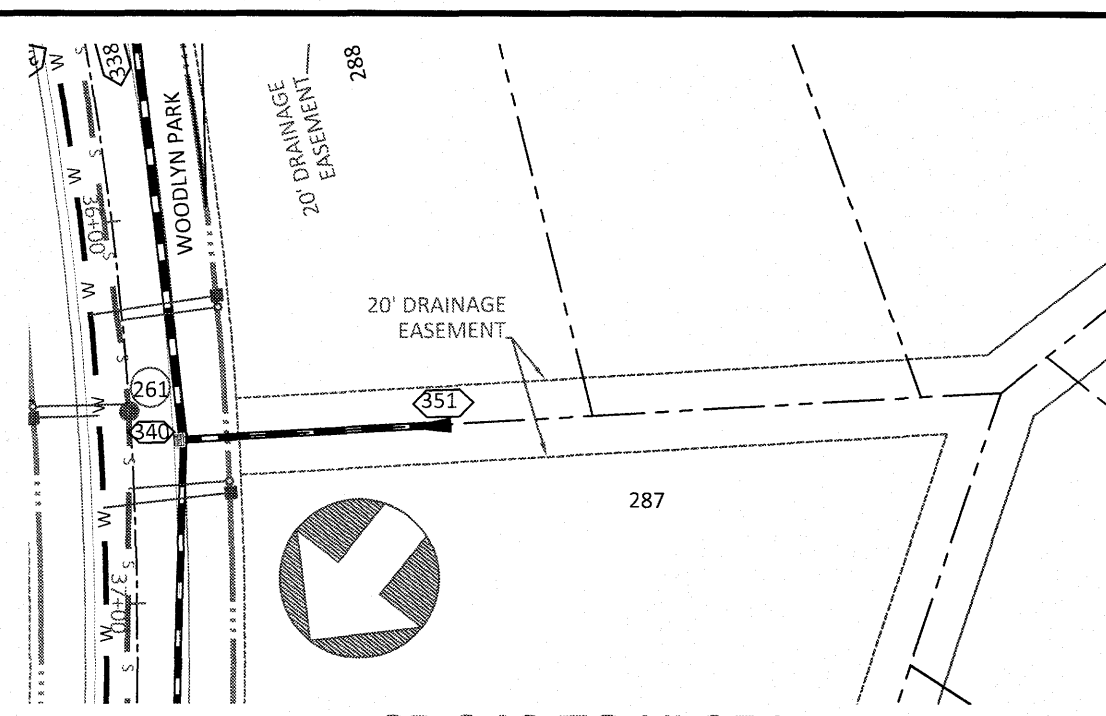
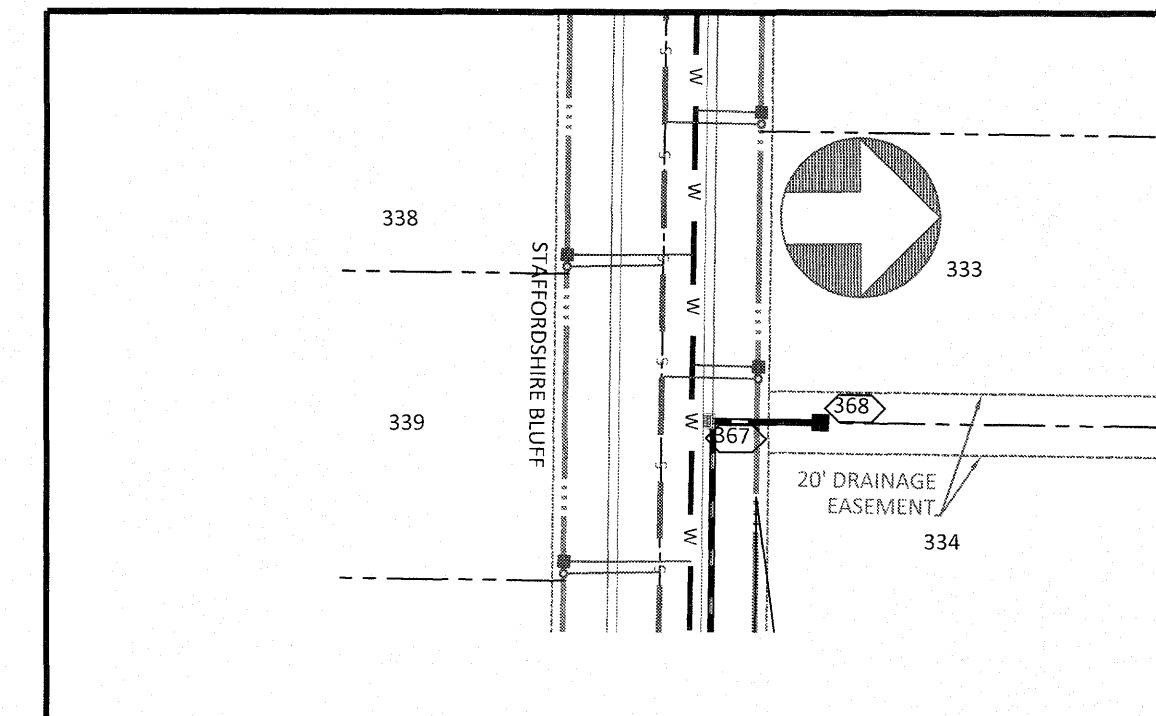
NO.	DATE	REVISION:
1	7/21/2021	ISSUE FOR REVIEW BY THE TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH.

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**KALAS FALLS PHASE 3**  
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 WAKE COUNTY, NC

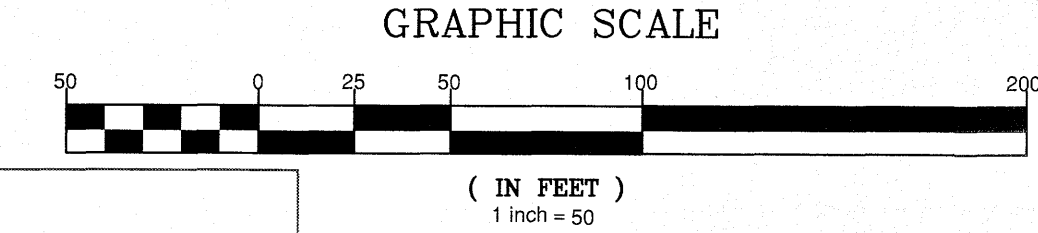
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 DATE: FEB 18, 2021  
 SHEET TITLE:  
**OFF STREET STORM PLAN & PROFILE**  
 SHEET NO.: 17.0





NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLECE, III AND ASSOCIATES, P.A.

UTILITIES LEGEND	
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	100 YEAR FLOOD EASEMENT



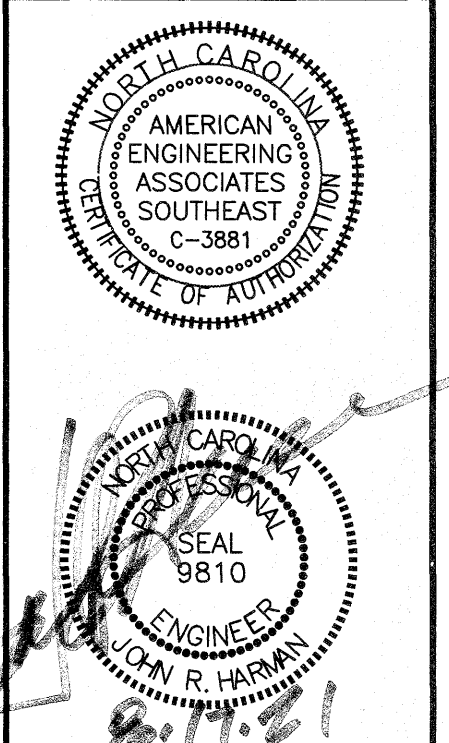
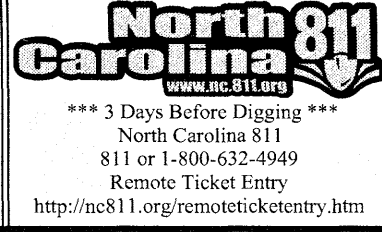
**SITE PERMITTING APPROVAL**  
 Water and Sewer Permits (if applicable)  
 The City of Raleigh consents to the connection and extension of the City's Public Sewer System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

The City of Raleigh consents to the connection and extension of the City's Public Water System as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

The City of Raleigh consents to the connection to its public sewer system and extension of the private sewer collection system as shown on this plan. The material and construction methods used for this project shall conform to the standards and specifications of the City's Public Utilities Handbook. City of Raleigh Public Utilities Department Permit # \_\_\_\_\_

**CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION**  
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City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer \_\_\_\_\_



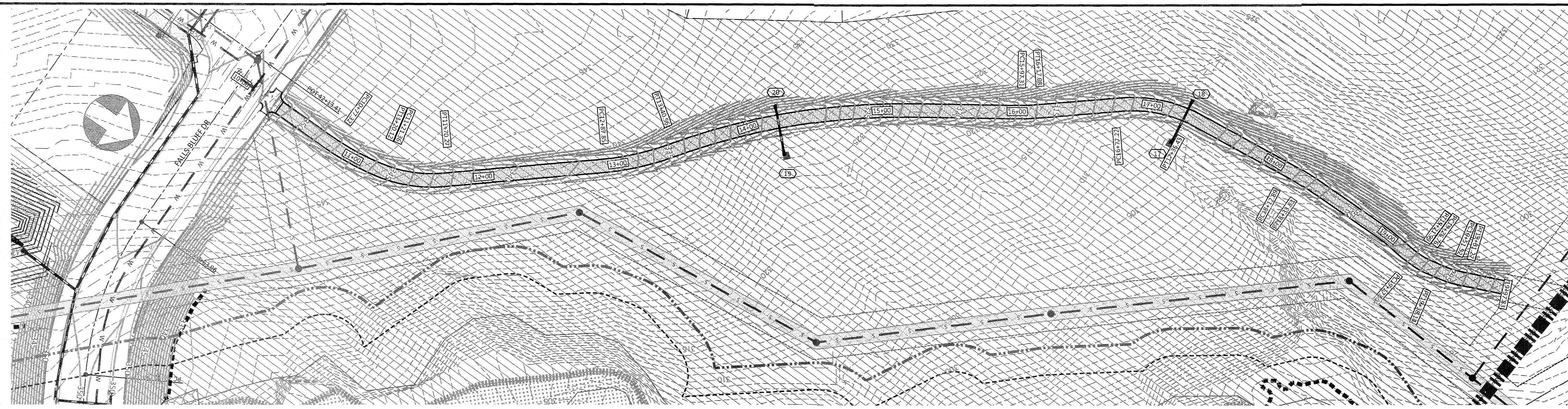
NO.	DATE	REVISION
1	1/21/2021	1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**  
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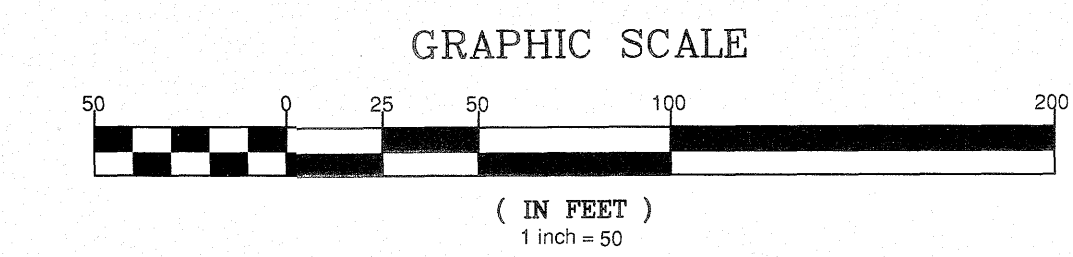
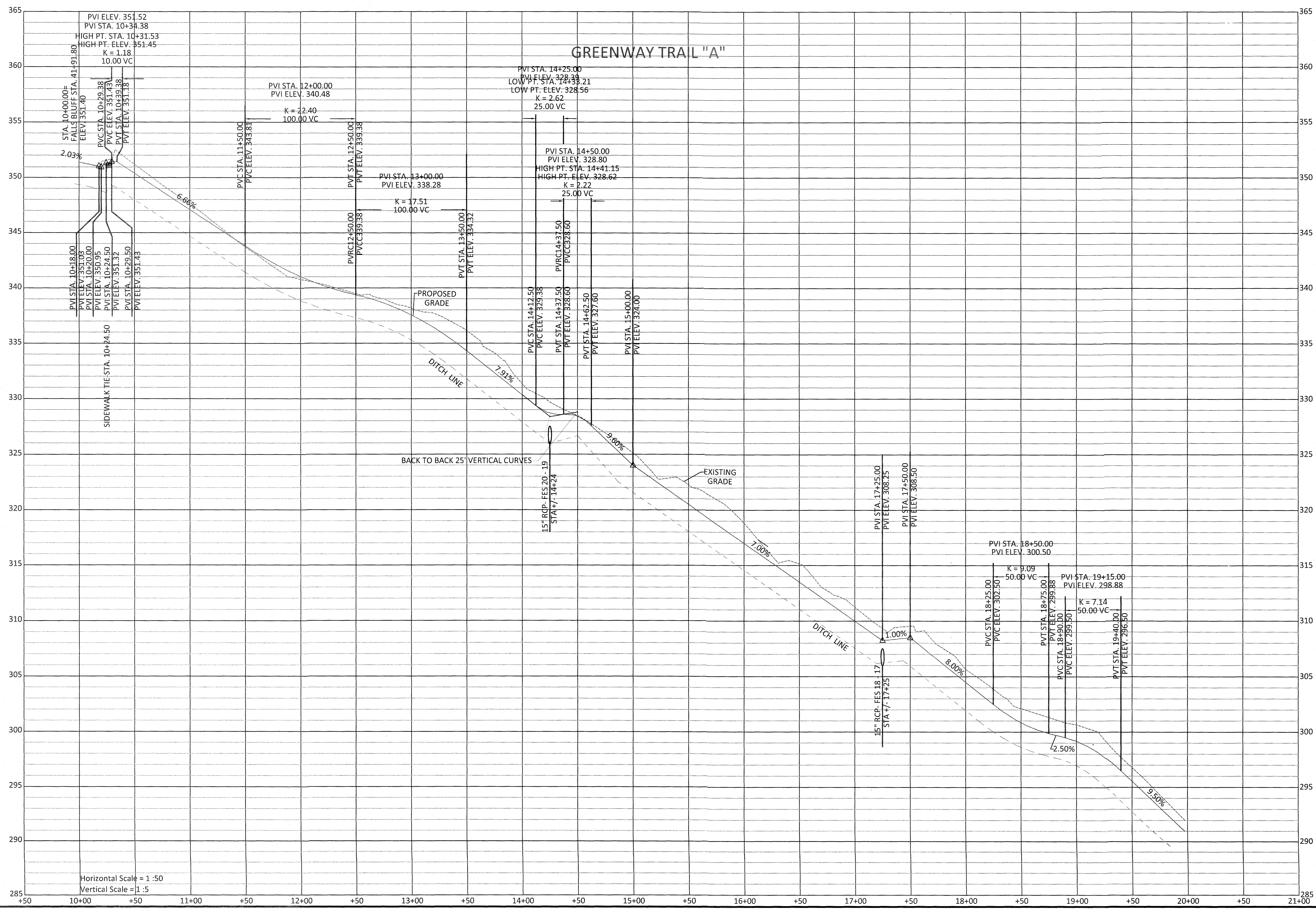
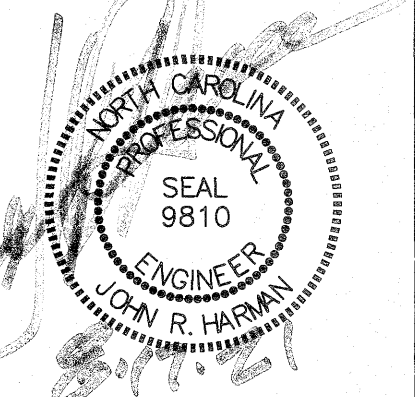
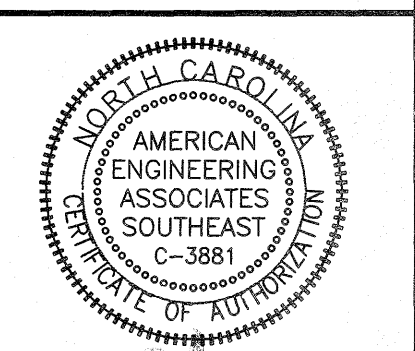
**KALAS FALLS PHASE 3**  
 1822 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER: 9900  
 CHECKED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 DATE: FEB 18, 2021  
 SHEET TITLE: **OFF STREET STORM PLAN & PROFILE**  
 SHEET NO.: 17.1





NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLECE, III AND ASSOCIATES, P.A.



UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT

NO.	DATE	REVISION
1	1/21/2021	REVISED FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF RALEIGH

**STIPULATION FOR REUSE**  
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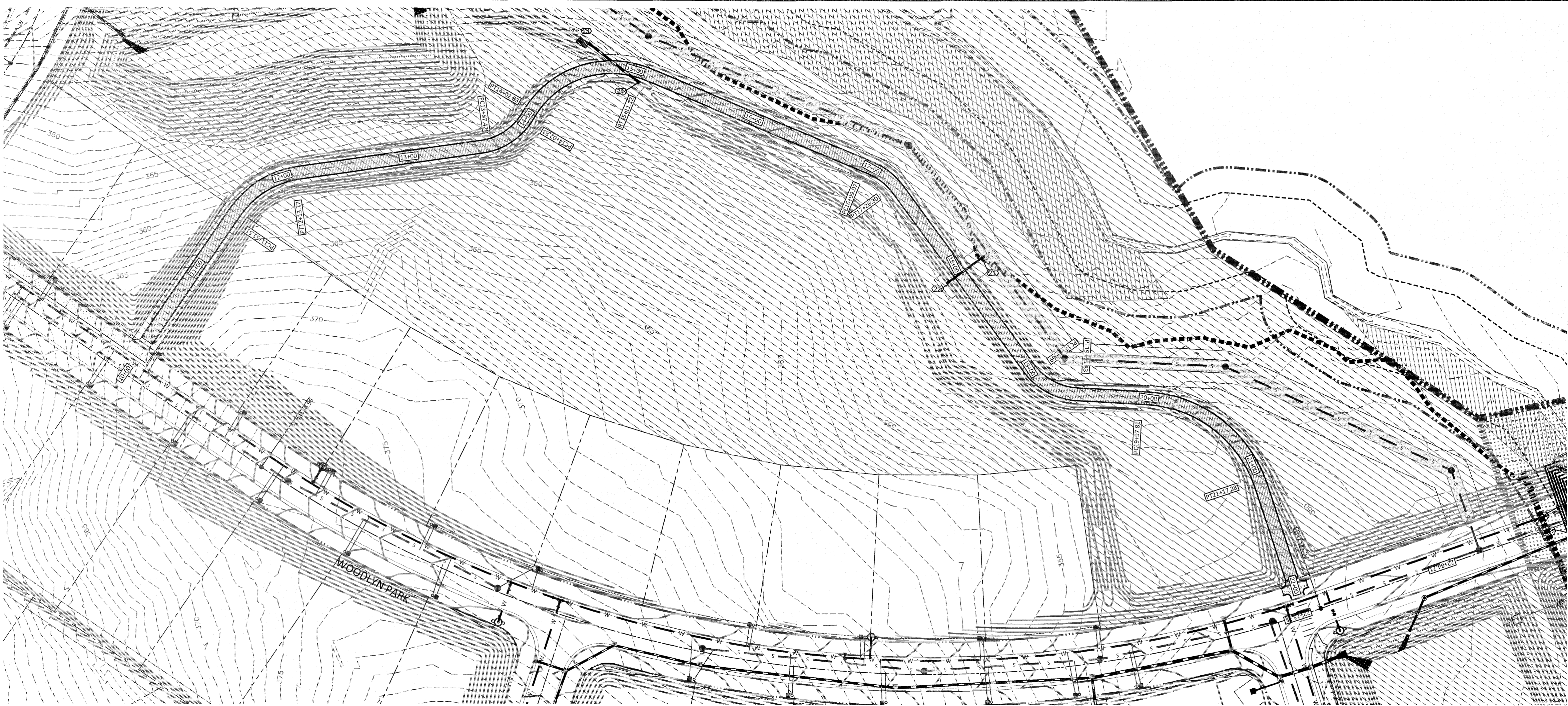
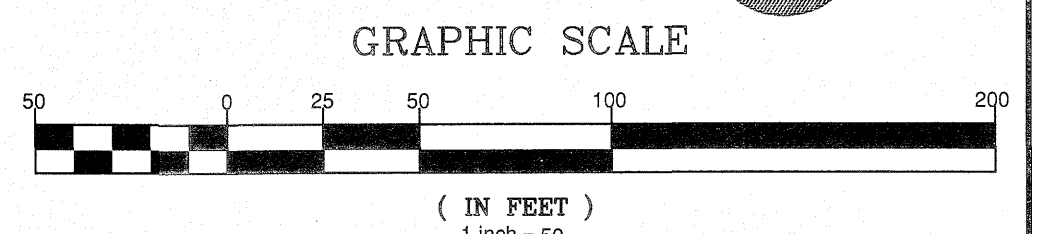
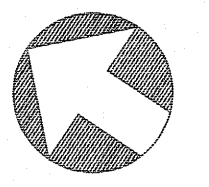
**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	<b>GREENWAY TRAIL "A" PLAN &amp; PROFILE</b>
SHEET NO.:	18.0

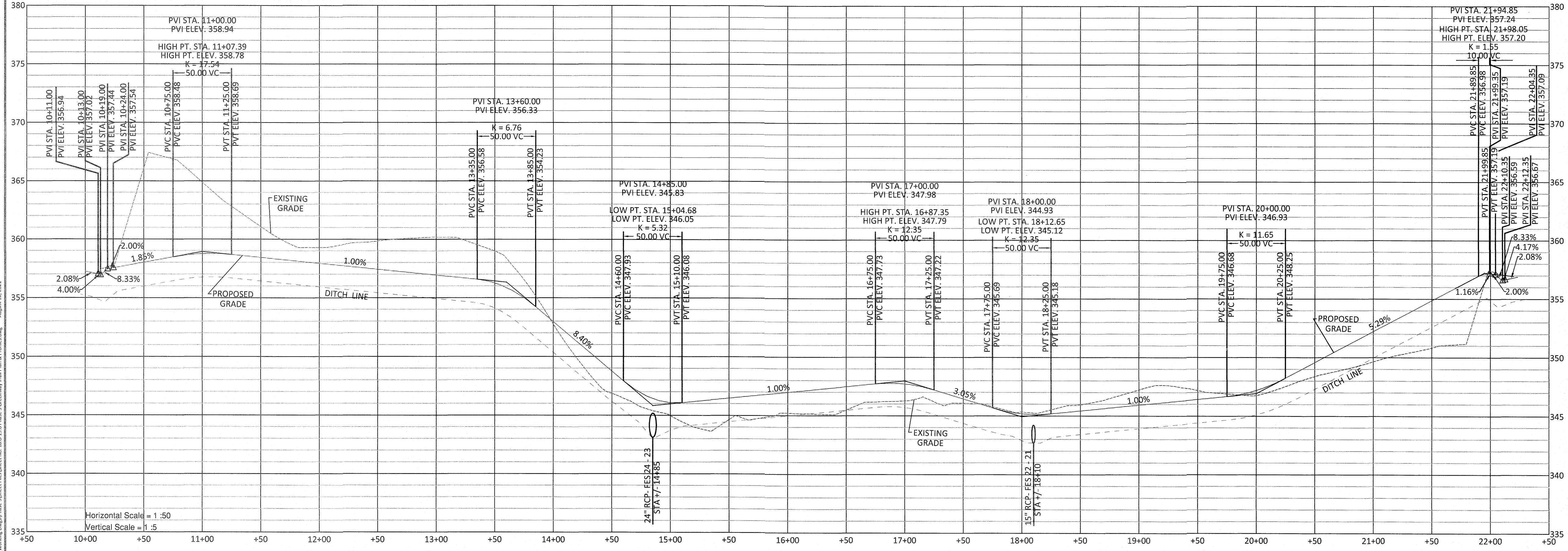




NOTE: THE 100 YEAR FLOOD-LINE AS ON THESE PLANS WERE TAKEN FROM THE FLOOD STUDY PREPARED BY DONLAD A SEVER, PE (024627) OF HUGH J. GILLECE, III AND ASSOCIATES, P.A.



GREENWAY TRAIL "B"



UTILITIES LEGEND	
	EXISTING BOUNDARY
	EXISTING 50' NEUSE RIPARIAN BUFFER
	EXISTING BUFFER ZONES
	PROPOSED LOT LINE
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED EASEMENT
	PHASELINE
	RIP RAP
	BASIN WEIR
	JUNCTION BOX
	PROPOSED CATCH BASIN
	PROPOSED YARD INLET
	PROPOSED DROP INLET
	PROPOSED FLARED END SECTION
	PROPOSED WATER METER
	PROPOSED SEWER SERVICE
	PROPOSED MANHOLE
	PROPOSED FIRE HYDRANT
	PROPOSED WATER VALVE
	PROPOSED WATER REDUCER
	PROPOSED SEWER LINE
	PROPOSED WATER LINE
	PROPOSED STORM WATER
	EXISTING WETLANDS AREA
	OPEN SPACE
	FUTURE PHASING
	EXISTING PHASING
	100 YEAR FLOOD EASEMENT

REVISION: 1. DATE: 7/21/2021  
 NO. 1. 1ST REVIEW FROM TOWN OF ROLESVILLE CONSULTANT, WAKE COUNTY AND CITY OF ROLESVILLE

STIPULATION FOR REUSE  
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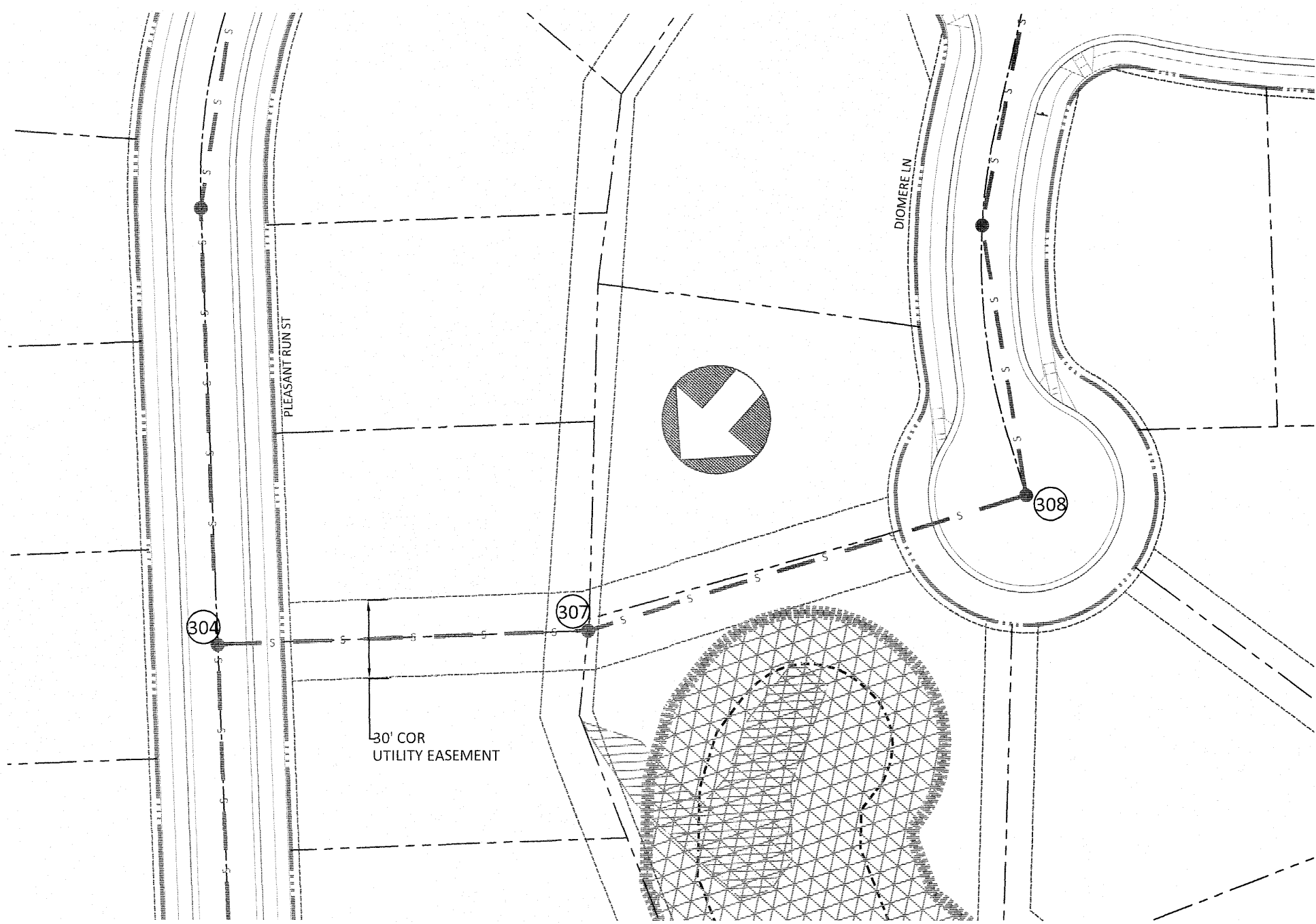
KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**GREENWAY TRAIL "B" PLAN & PROFILE**

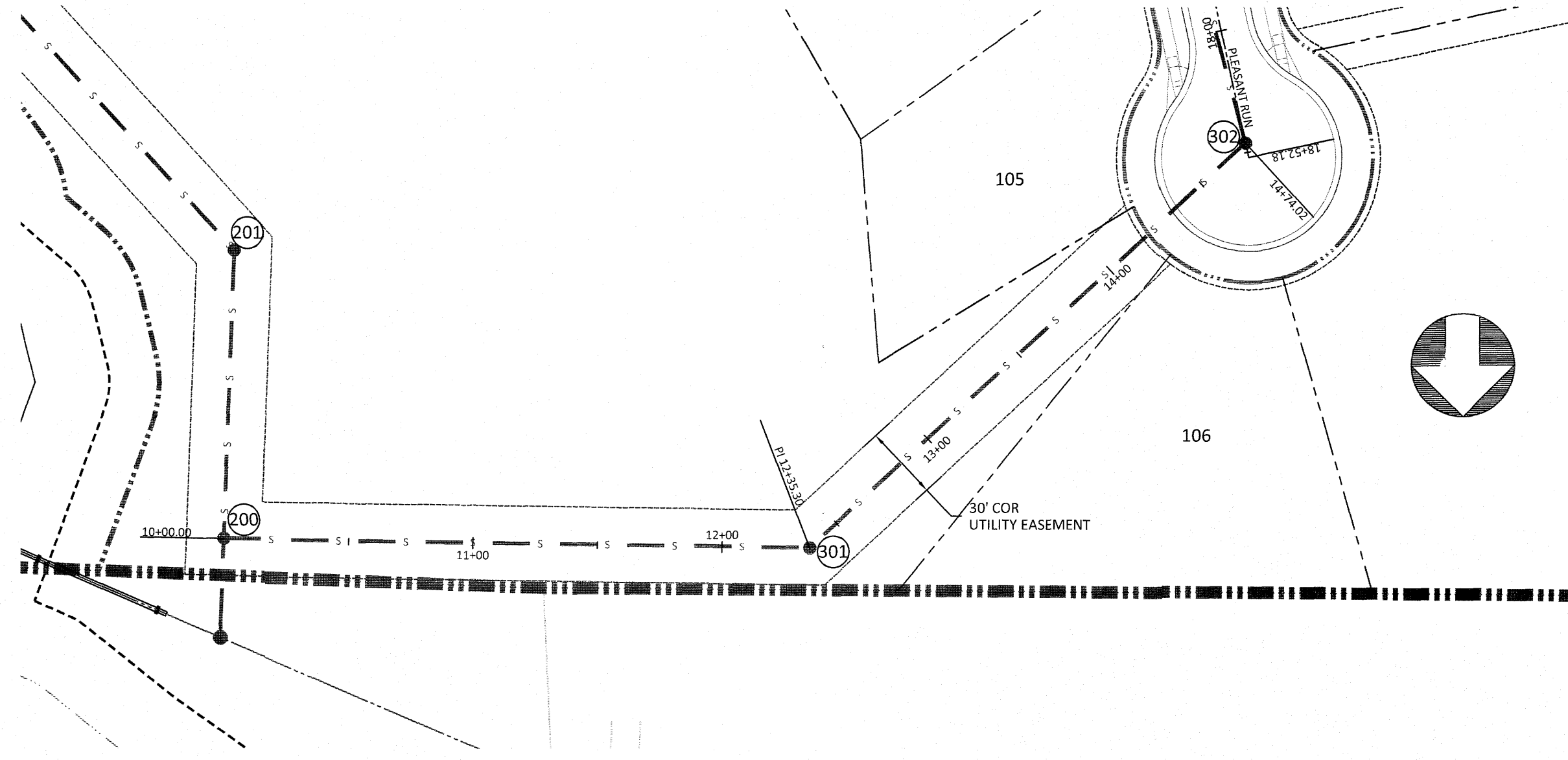
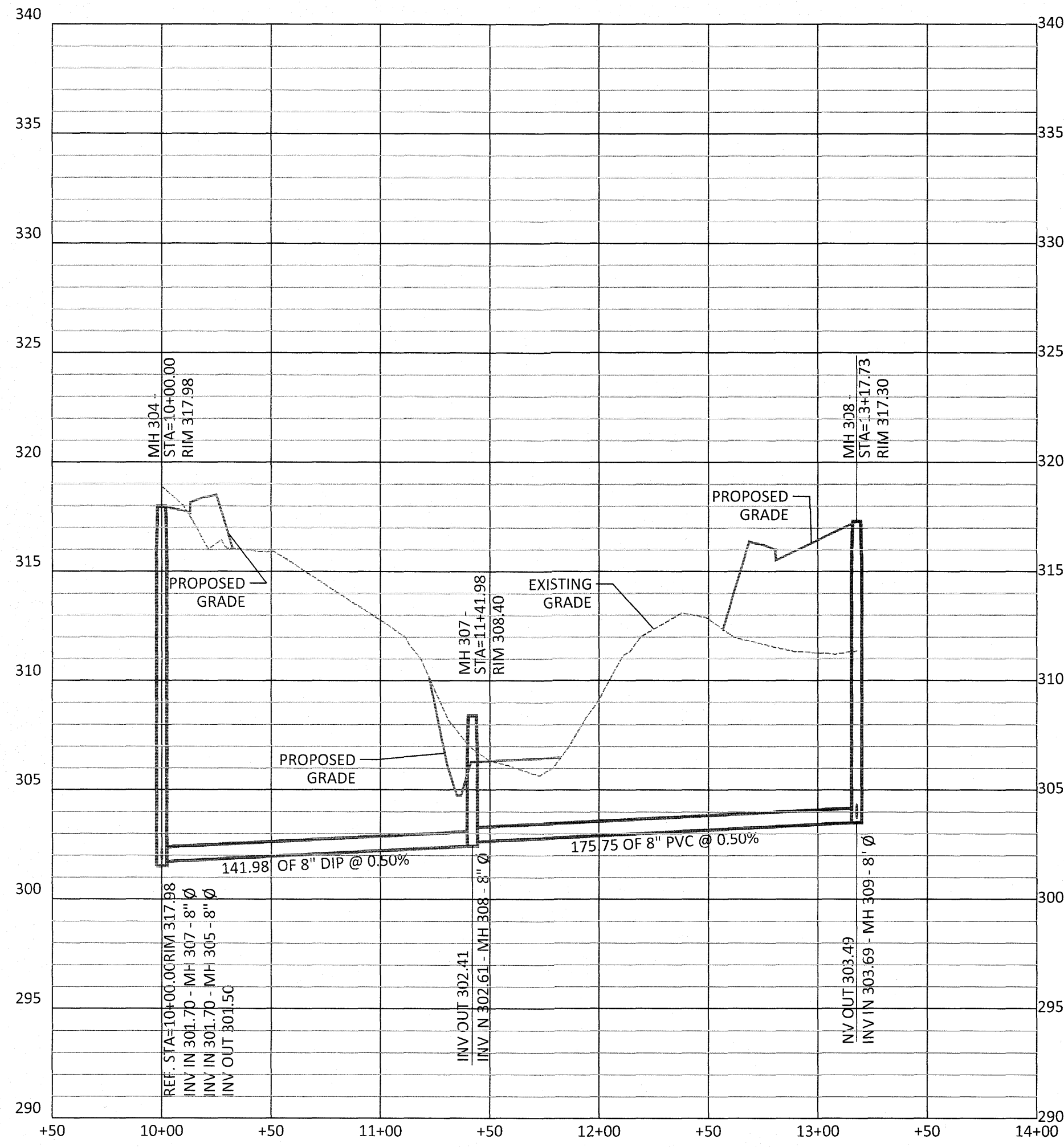
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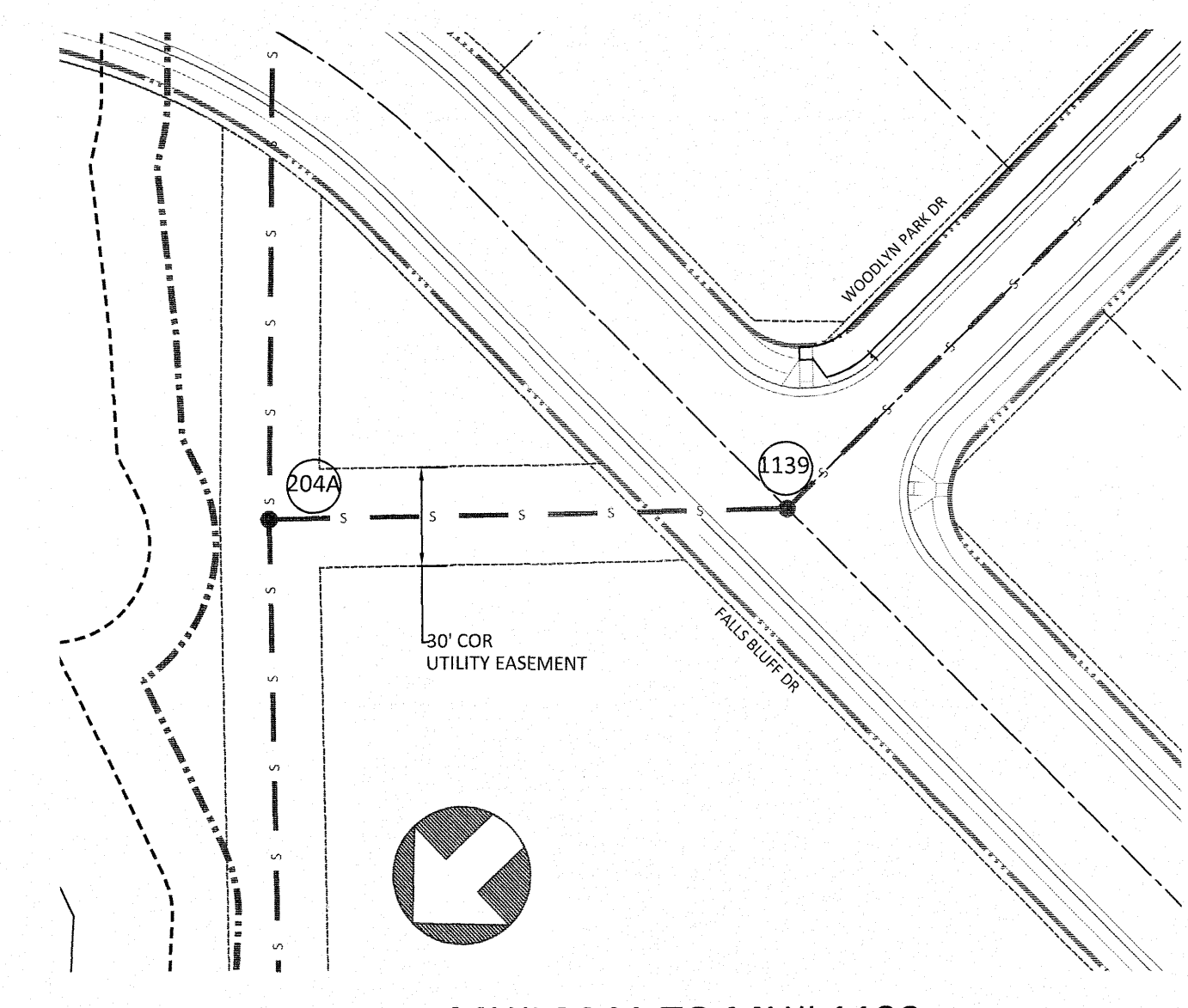
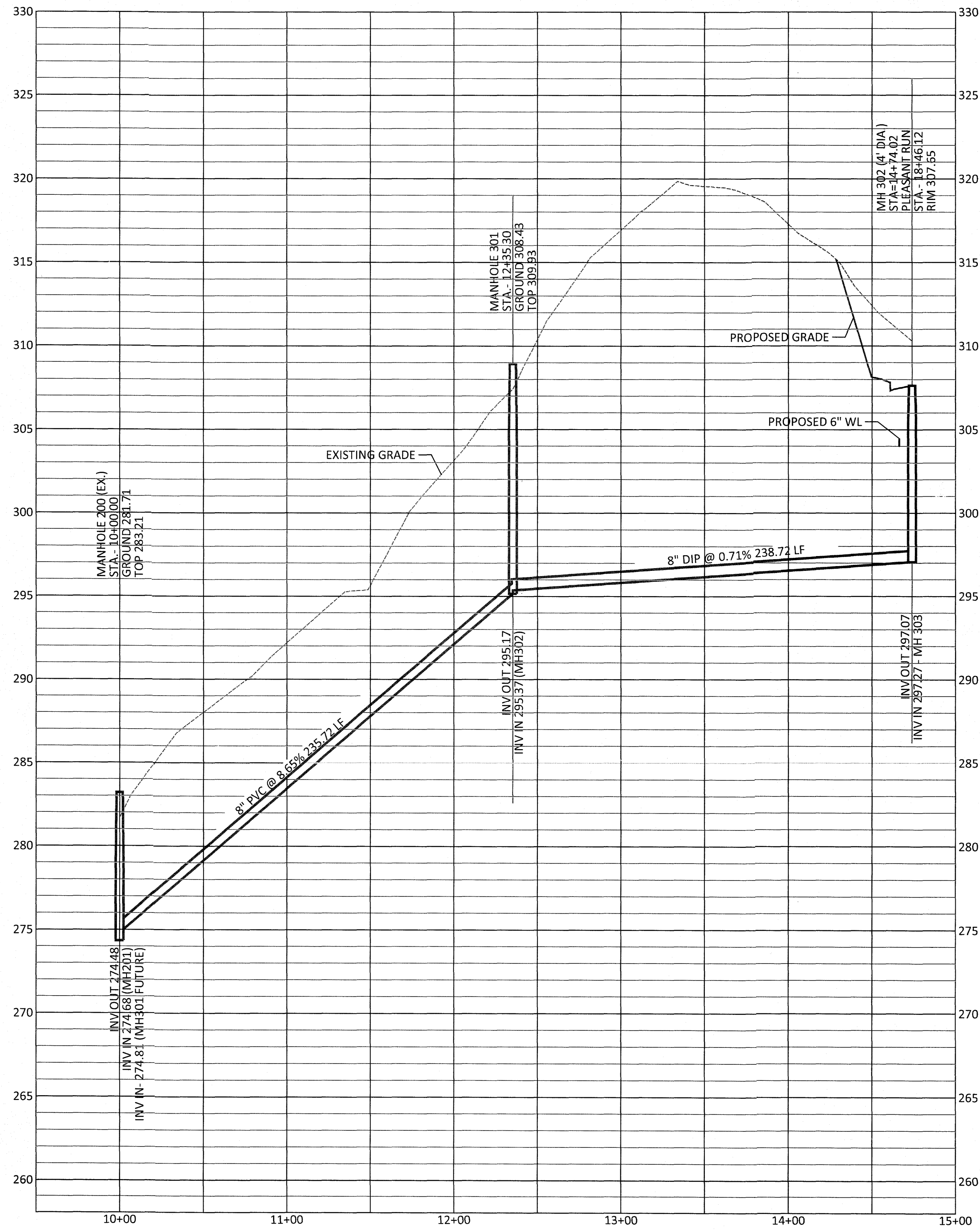




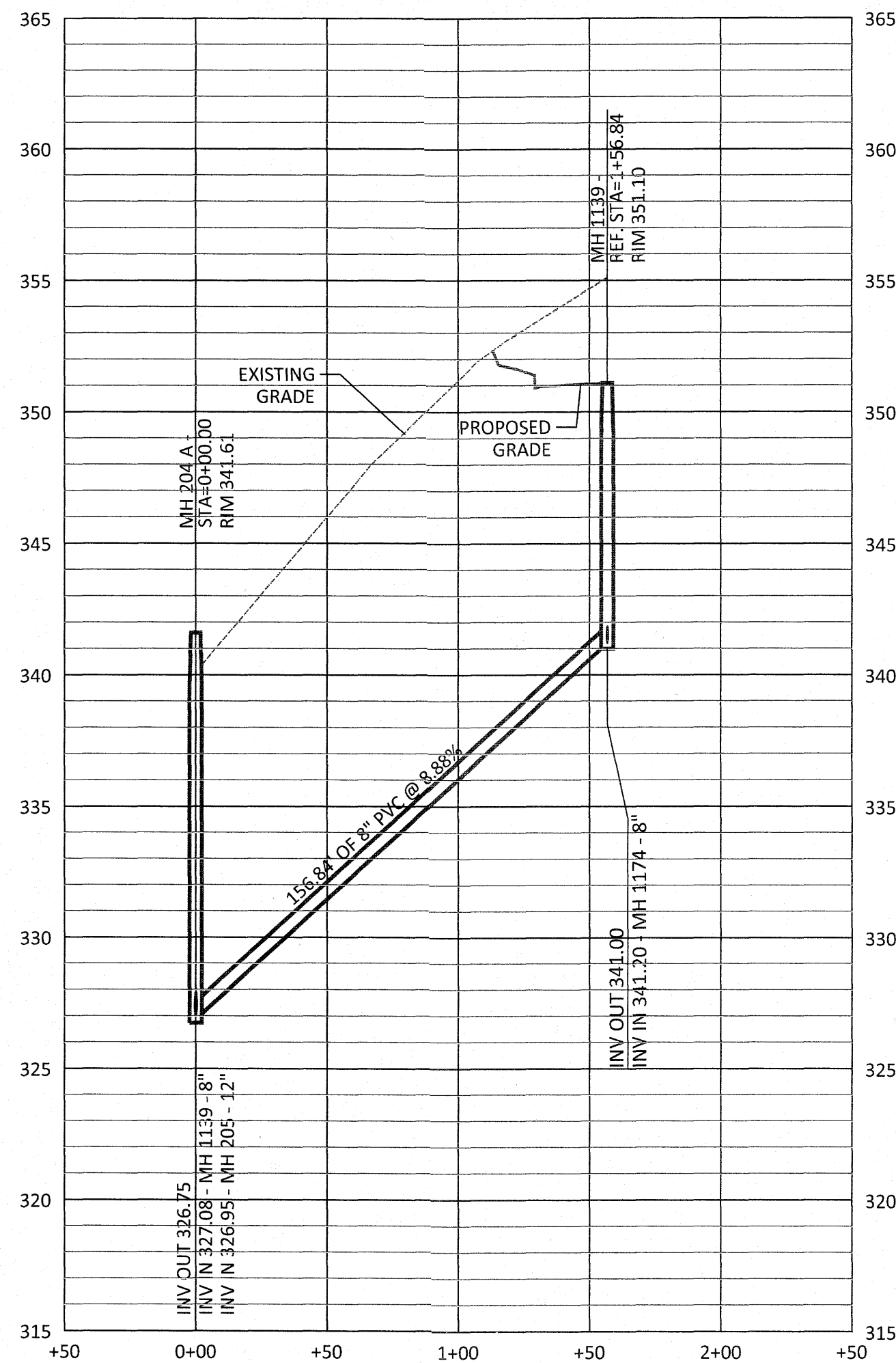
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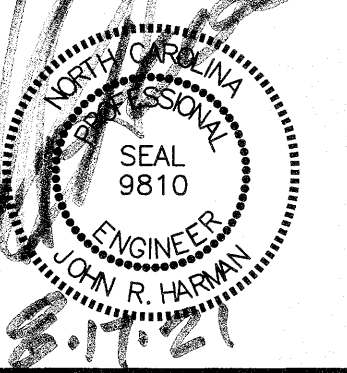
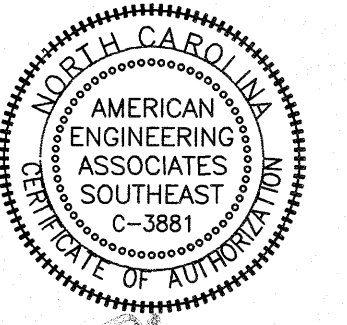
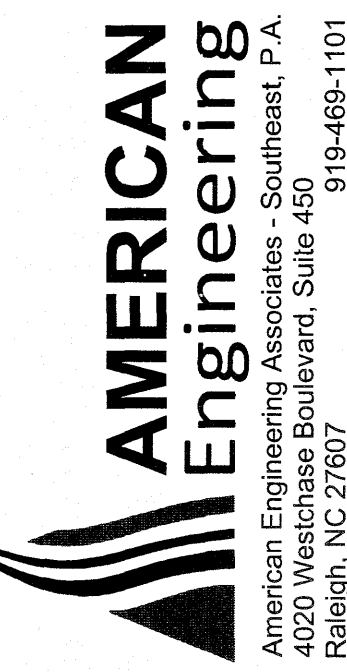
MH# 200 TO MH# 302



MH# 204A TO MH# 1139



August 11, 2021



NO.	DATE	REVISION
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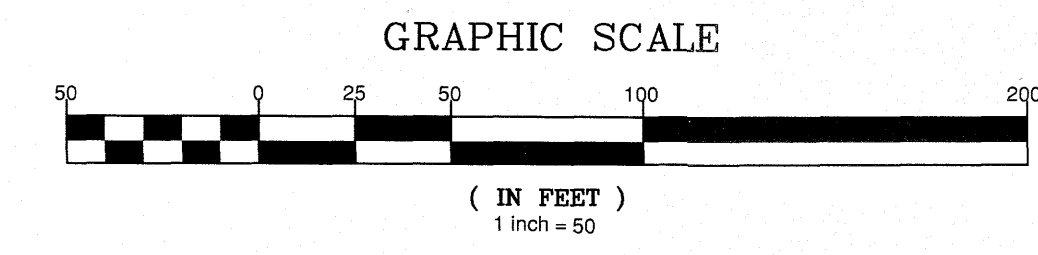
**STIPULATION FOR REUSE**  
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**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

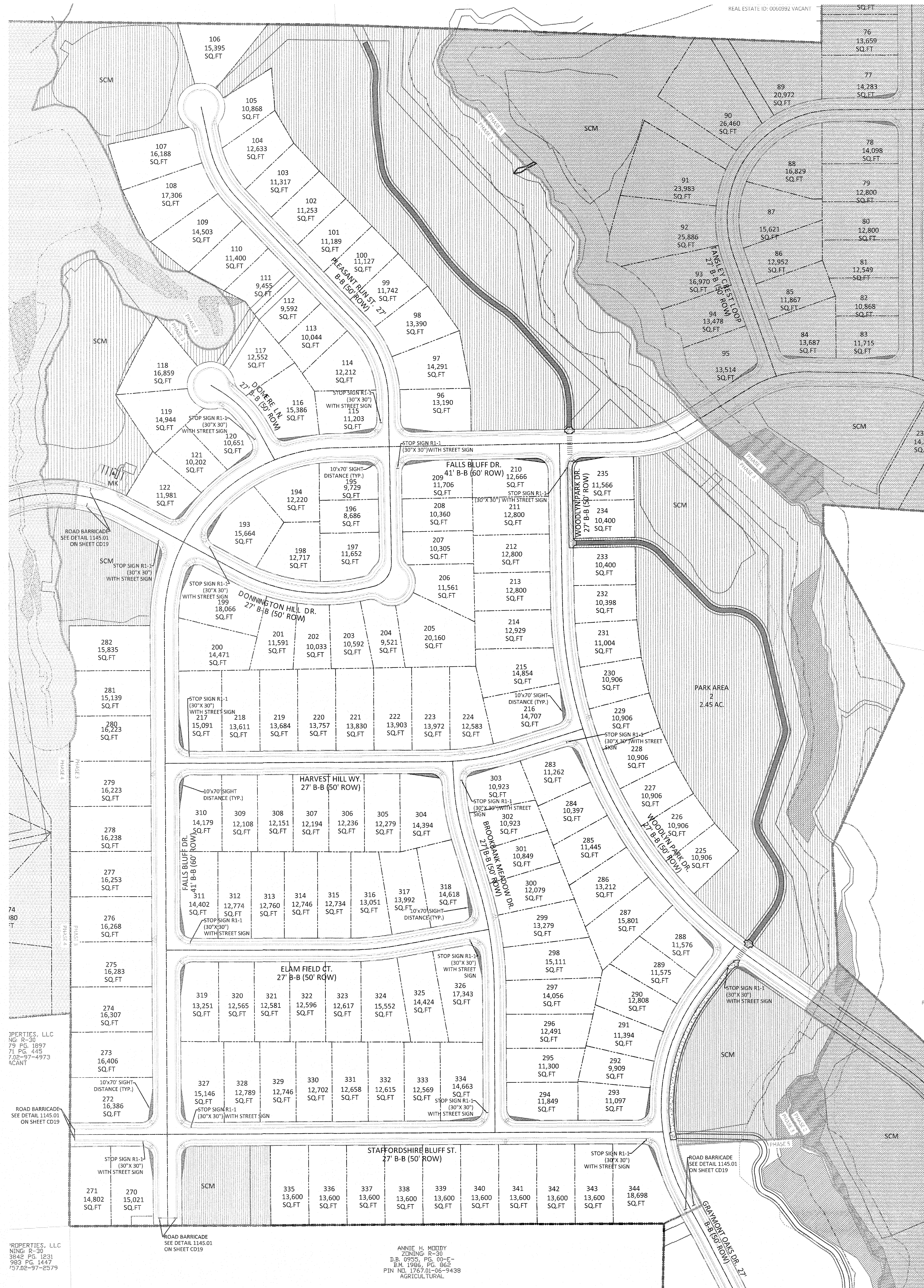
JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021

SHEET TITLE:  
**SANITARY  
 OUTFALL PLAN  
 AND PROFILE**

SHEET NO.:  
**20.0**



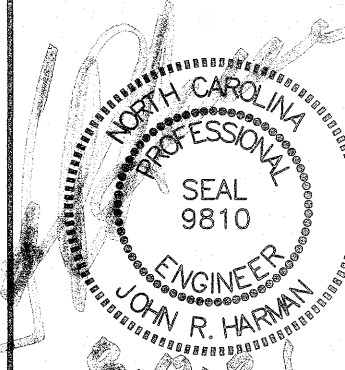
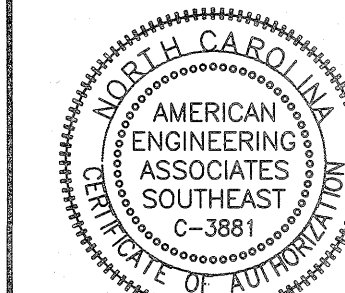
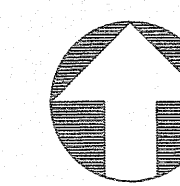
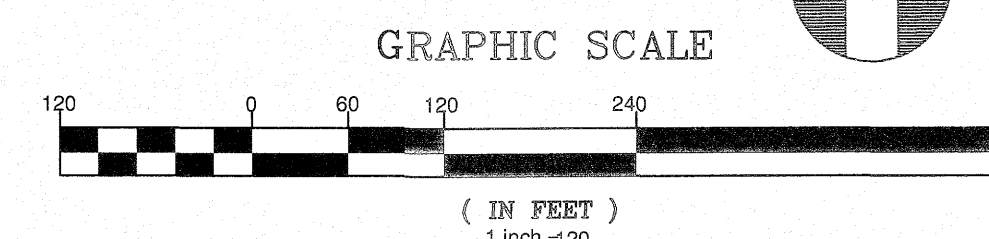




NOTE:  
 A. SIGHT DISTANCE IS THE LENGTH OF ROADWAY AHEAD VISIBLE TO THE DRIVER. THE MINIMUM SIGHT DISTANCE AVAILABLE ON THE ROADWAY SHOULD BE SUFFICIENTLY LONG TO ENABLE A VEHICLE TRAVELING AT OR NEAR THE DESIGN SPEED TO STOP BEFORE REACHING A STATIONARY OBJECT IN ITS PATH.  
 B. MINIMUM STOPPING SIGHT DISTANCES SHALL BE PROVIDED IN BOTH THE HORIZONTAL AND VERTICAL PLANES FOR PLANNED ROADWAYS AS RELATED TO ASSUMED DRIVER'S EYE HEIGHT AND POSITION.  
 C. ADEQUATE SIGHT DISTANCE SHOULD BE PROVIDED AT ALL DRIVEWAY ACCESS POINTS AND SHALL BE IN ACCORDANCE WITH THE STANDARDS PROVIDED IN THIS MANUAL.  
 D. SIGHT TRIANGLES EASEMENTS SHALL BE SHOWN ON ALL NCDOT MAINTAINED ROADWAYS FOR ANY DRIVEWAY ACCESS ACCORDING TO THE MANUAL "POLICY ON STREET AND DRIVEWAY ACCESS TO NORTH CAROLINA HIGHWAYS," AS ADOPTED AND AMENDED BY NCDOT.  
 E. THIS NOTE MUST BE PLACED ON ALL PLANS "WITHIN THE AREA OF ABOVE DEFINED SIGHT TRIANGLE, THERE SHALL BE NO SIGHT OBSTRUCTING OR PARTLY OBSTRUCTING WALL, FENCE, SIGN, FOLIAGE, BERMS, OR PARKED VEHICLES BETWEEN THE HEIGHTS OF 24 INCHES AND EIGHT FEET ABOVE THE CURB LINE ELEVATION OR THE NEAREST TRAVELED WAY IF NO CURBING EXISTS."  
 F. OBJECTS THAT CAN BE PERMITTED IN THE SIGHT DISTANCE TRIANGLE ARE UTILITIES SUCH AS HYDRANTS, UTILITY POLES, UTILITY BOXES, GSI PRACTICES, AND TRAFFIC CONTROL DEVICES. THOSE OBJECTS MUST BE LOCATED TO MINIMIZE VISUAL OBSTRUCTION.

TRANSPORTATION LEGEND	
	PROPOSED LOT LINE
	FLOODLINE
	BUILDING RESTRICTION LINE
	PROPOSED LOT SETBACK
	PROPOSED ROW
	PROPOSED SIDEWALK
	PROPOSED BOC
	PROPOSED EOP
	PROPOSED CENTERLINE
	PROPOSED GRADING
	PROPOSED EASEMENT
	PROPOSED HANDICAP RAMPS
	PROPOSED SIGHT TRIANGLE
	MAIL KIOSK LOCATION
	OPEN SPACE
	GREENWAY TRAIL HATCH
	GREENWAY/ROADSIDE TRAIL
	FUTURE PHASING
	EXISTING PHASING
	EXISTING WETLANDS
	PROPOSED PHASELINE

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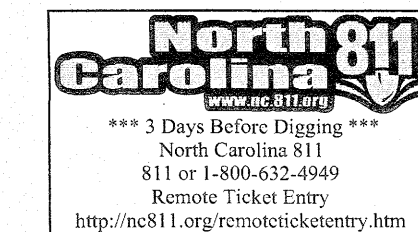
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**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

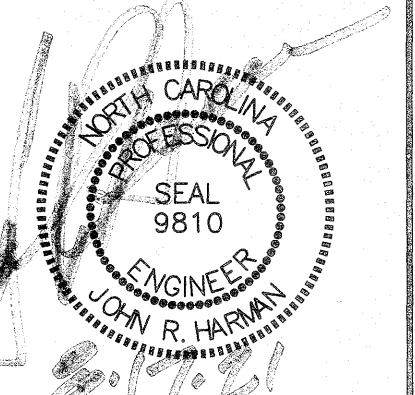
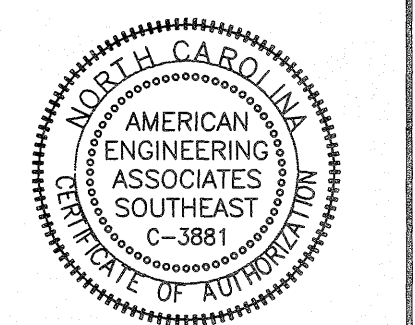
JOB NUMBER: 9800  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**TRANSPORTATION PLAN**

SHEET NO.: **21.0**



\*\*\* 3 Days Before Digging \*\*\*  
 North Carolina 811  
 811 or 1-800-652-4949  
 Remote Ticket Entry  
<http://nc811.org/remoteticketentry.htm>





NO.	DATE	REVISION

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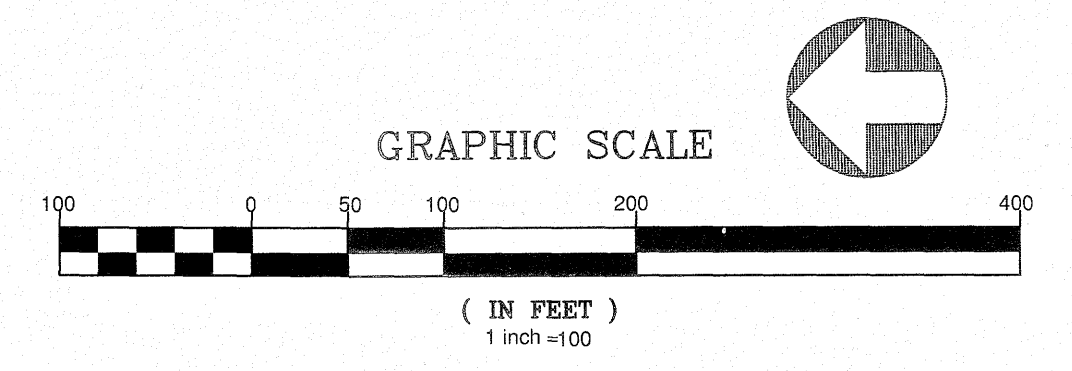
JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021

**LANDSCAPE PLAN**

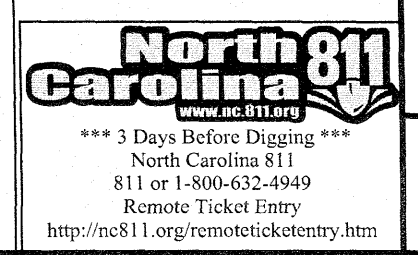
L1

**AMENITY PLANTING SCHEDULE**

SYMB.	KEY	QUAN.	BOTANICAL NAME	COMMON NAME	SIZE	CONT.
<b>TREES</b>						
	CJR	8	Cryptomeria japonica 'Radicans'	Radicans Cryptomeria	2.5" Cal., 8' Ht.	B & B
	GBG	2	Ginkgo biloba 'Goldspire'	Goldspire Ginkgo	2.5" Cal., 8' Ht.	B & B
	POO	13	Prunus okame	Okame Cherry	2.5" Cal., 8' Ht.	B & B
	UPD	137	Ulmus parviflora 'Drake'	Drake Chinese Elm	2.5" Cal., 8' Ht.	B & B
	ZSV	232	Zelkova serrata 'Village Green'	Village Green Zelkova	2.5" Cal., 8' Ht.	B & B
<b>SHRUBS</b>						
	DEH	11	Distylium 'PIDIST-1' PP #24,410	Emerald Heights Distylium	#3 Gal	Cont.



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION  
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 City of Raleigh Development Approval \_\_\_\_\_  
 Raleigh Water Review Officer



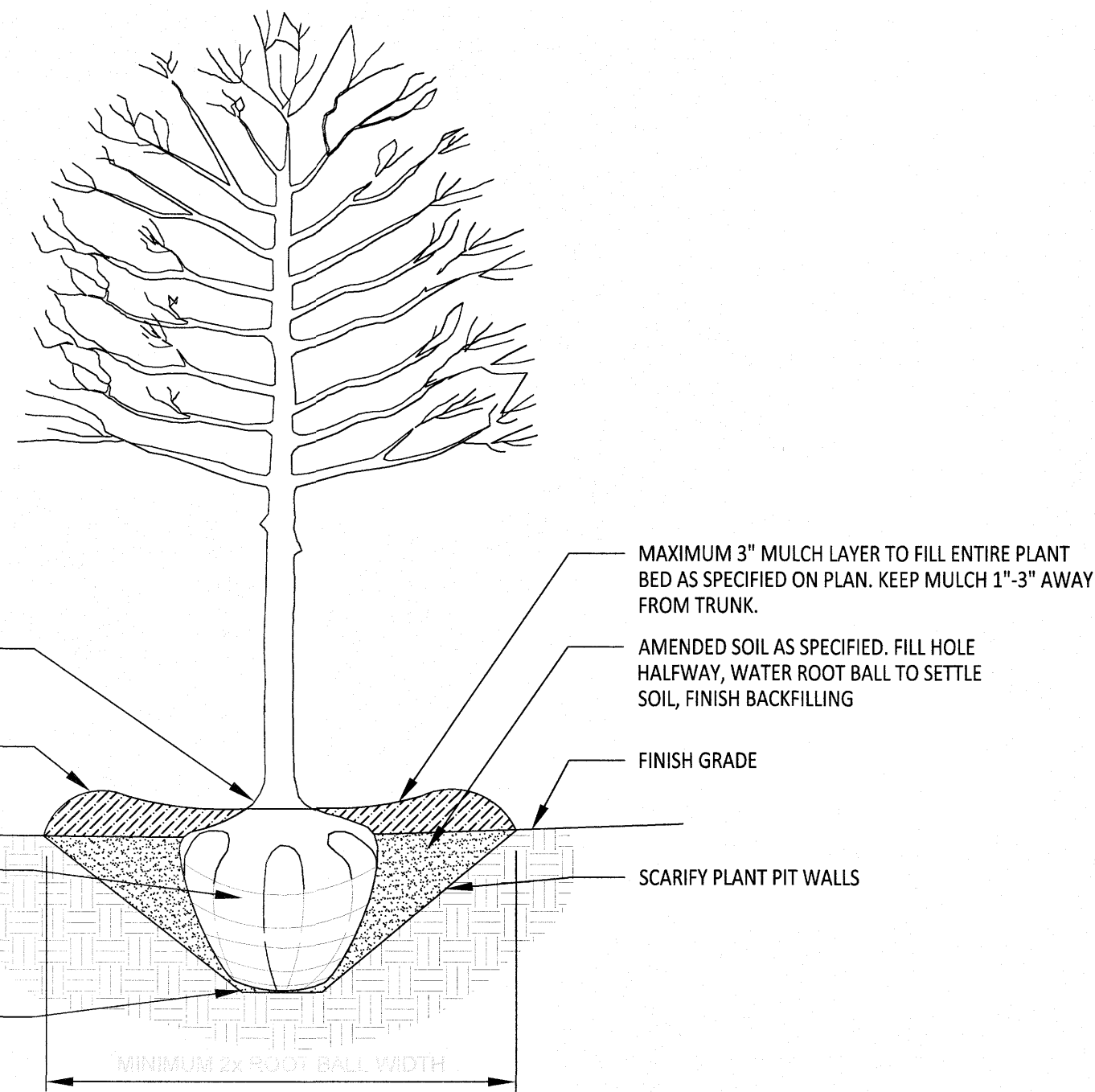
August 16, 2021  
 C:\Users\jmoore\OneDrive\Documents\Projects\KALAS FALLS PHASE 3\Drawings\Site\Site Plan.dwg



# PLANT DETAILS

## NOTES

- REMOVE WIRE AND NYLON TWINE FROM BALL AND CANOPY.
- SOAK ROOT BALL AND PLANT PIT IMMEDIATELY AFTER INSTALLATION.
- DO NOT STAKE OR WRAP TRUNK UNLESS:
  - TREE HAS A LARGE CROWN
  - PLANTING SITE IS CONSISTENTLY WINDY OR IS A STEEP SLOPE
  - PLANTING SITE IS SUSCEPTIBLE TO VANDALISM.
- REMOVE ALL TAGS AND LABELS FROM PLANT MATERIAL.
- PRUNE DEAD, BROKEN, RUBBING OR CROSSING BRANCHES, AND ANY SUCKERS AFTER PLANTING. DO NOT TOP TREES.



ALL TREES SHALL MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004)

FOR EXAMPLE:	CALIPER	HEIGHT (RANGE)	MAX. HEIGHT	MIN. ROOT BALL DIA.	MIN. ROOT BALL DEPTH
	2"	12'-14'	16'	24"	16"
	3"	14'-16'	18'	32"	21"

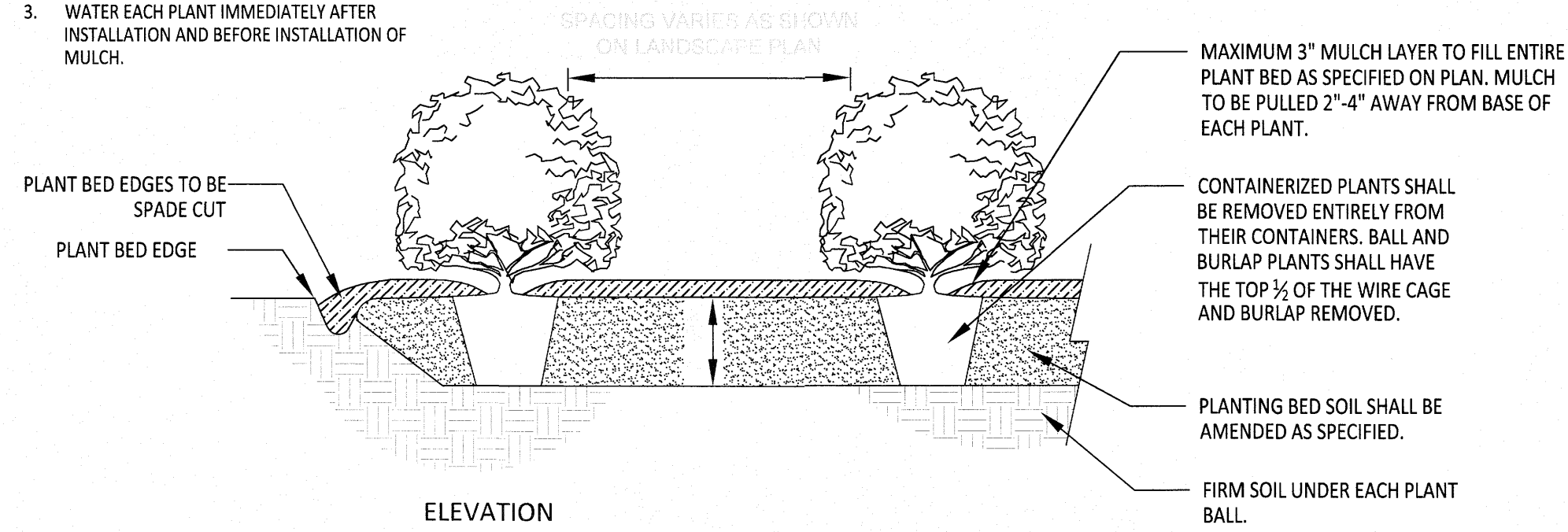
## TYPICAL TREE PLANTING

(FOR SINGLE AND MULTI-STEM TREES)

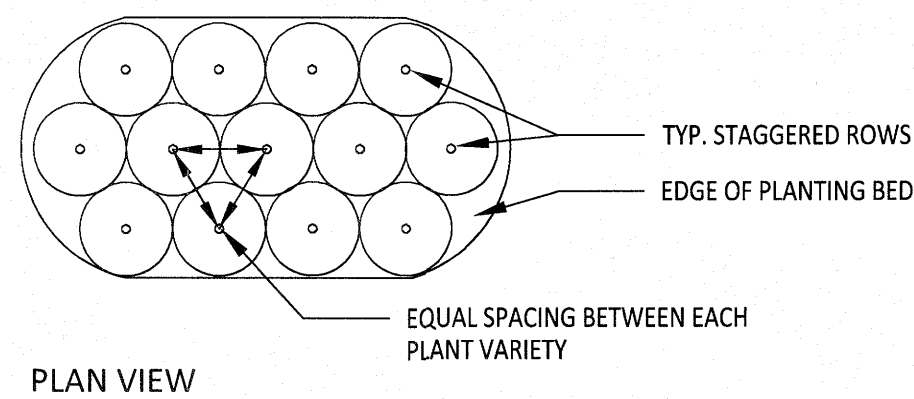
NOT TO SCALE

## NOTES

- SCARIFY ROOT MASS OF CONTAINERIZED PLANTS.
- PLANT ROOT BALL SHOULD BE INSTALLED 1"-3" MAXIMUM ABOVE FINISHED GRADE.
- WATER EACH PLANT IMMEDIATELY AFTER INSTALLATION AND BEFORE INSTALLATION OF MULCH.



ELEVATION



PLAN VIEW

## TYPICAL SHRUB PLANTING

NOT TO SCALE

# PLANT NOTES

## PLANT INSTALLATION & MAINTENANCE NOTES:

- ALL LANDSCAPING SHALL BE OF NURSERY STOCK QUALITY AND SHALL BE INSTALLED IN A SOUND, WORKMANLIKE MANNER AND ACCORDING TO ACCEPTED GOOD PLANTING PROCEDURES.
- ALL LANDSCAPING SHALL BE ADAPTABLE TO CLIMATIC CONDITIONS OF THE AREA.
- LARGE TREES SHOULD NOT BE PLANTED WITHIN EASEMENTS AND A MINIMUM OF 6' FROM UTILITY LINES, UNLESS OTHERWISE SPECIFIED BY REVIEWING AGENCY. SHRUBS MAY BE PLANTED IN EASEMENTS, BUT A MINIMUM OF 3' FROM UTILITY LINES, UNLESS OTHERWISE SPECIFIED BY REVIEWING AGENCY.
- ALL LANDSCAPING SHALL BE MAINTAINED IN GOOD CONDITION.
- ALL LANDSCAPING SHALL AT ALL TIMES PRESENT A HEALTHY, NEAT, CLEAN, ORDERLY, DISEASE-FREE AND PEST-FREE APPEARANCE.
- ALL LANDSCAPING SOIL AND FILL SHALL BE FREE FROM WEEDS, REFUSE, AND DEBRIS AT ALL TIMES.
- EXCESS SOIL SHALL BE DISPOSED OF IN A LEGAL MANNER.
- ANY DEAD PLANT MATERIAL OR MATERIAL THAT FAILS TO SHOW HEALTHY GROWTH MUST BE REMOVED WITHIN 30 DAYS.
- REPLACEMENT OF REMOVED PLANT MATERIAL MUST TAKE PLACE WITHIN 90 DAYS OF REMOVAL OR NOTIFICATION BY THE CITY, WHICHEVER OCCURS FIRST.
- ANY REPLACEMENT PLANT MATERIAL MUST MEET THE SIZE AND OTHER CHARACTERISTICS OF NEWLY PLANTED MATERIAL.
- IF USING STAKES AND GUYS SUCH SUPPORTS SHALL BE DESIGNED SO AS TO PROTECT TREES AND SHRUBS FROM INJURY. TREES AND SHRUBS SHALL BE FASTENED TO THE SUPPORT WITH AN ACCEPTABLE COMMERCIAL TREE TIE OF PLASTIC OR HOSE-COVERED WIRE. AFTER THE WARRANTY PERIOD HAS ENDED, STAKES AND GUYS SHALL BE REMOVED.
- CONTRACTOR IS RESPONSIBLE TO CONTACT MISS UTILITIES (811) 48 HOURS PRIOR TO COMMENCEMENT OF WORK. CONTACT LANDSCAPE ARCHITECT IF FIELD CONFLICTS/DISCREPANCIES ARISE.
- CONTRACTOR RESPONSIBLE TO VERIFY PLANT COUNTS. PLANTING PLAN SHALL GOVERN IN THE CASE OF A CONFLICT.
- ALL PLANTS SHALL MEET OR EXCEED STANDARDS AS DETERMINED BY THE AMERICAN STANDARD OF NURSERY STOCK.
- CONTRACTOR SHALL WARRANTY ALL PLANTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
- WHEN POSSIBLE, PLANTING SHALL BE INSTALLED BETWEEN SEPTEMBER 1 - JUNE 30TH AND IN FAVORABLE WEATHER CONDITIONS. WHEN PLANTING MUST BE PERFORMED OUTSIDE OF SPECIFIED DATES, PLANTS MUST BE WATERED ON A REGULAR BASIS TO ENSURE VIABILITY.
- PLANT VARIETIES, SIZES AND LAYOUT SHALL CONFORM ACCURATELY TO THE LANDSCAPE PLAN. CONTACT LANDSCAPE ARCHITECT FOR FIELD CONFLICTS.
- DISTURBED AREAS SHALL BE SEEDED ACCORDING TO THE NOTES FOUND ON THIS PAGE.
- PLANT SUBSTITUTIONS SHALL BE BROUGHT TO THE ATTENTION OF AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- MULCH USED ON-SITE SHALL BE OF A NON-DYED, NATURAL HARDWOOD VARIETY TO BE INSTALLED AT A MAXIMUM DEPTH OF 3", MINIMUM DEPTH OF 2".

## TOPSOIL / PLANTING MIX MINIMUM REQUIREMENTS:

- TOPSOIL/PLANTING MIX SHOULD BE NATURAL, FERTILE, AGRICULTURAL SOIL CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH. IT SHOULD BE UNIFORM COMPOSITION THROUGHOUT, WITH ADMIXTURE OF SUBSOIL. IT SHOULD BE FREE OF STONES, LUMPS, LIVE PLANTS AND THEIR ROOTS, STICKS AND OTHER EXTRANEOUS MATTER. TOPSOIL SHOULD NOT BE USED WHILE IN A FROZEN OR MUDDY CONDITION.
- TOPSOIL/PLANTING MIX SHALL HAVE AN ACIDITY RANGE OF PH 5.5-7.0 AND THE FOLLOWING COMPOSITION:
 

CLAY (RED CLAY, WELL PULVERIZED)	MINIMUM 10%; MAXIMUM 35%
COMPOST*/ORGANIC	MINIMUM 5%; MAXIMUM 10%
SILT	MINIMUM 30%; MAXIMUM 50%
COARSE SAND (FREE OF ROCKS, 0.5 TO 1.0 MM F)	MINIMUM 30%; MAXIMUM 45%
- ORGANIC MATERIAL SUCH AS SAWDUST OR LEAF MOLD THAT HAS COMPLETED THE DECOMPOSITION PROCESS
- RECOMMENDATIONS:
 

CALCIUM	55 - 80%
MAGNESIUM	10 - 30%
POTASSIUM	5 - 8%
- ALL PLANTING AREAS SHOULD BE TESTED FOR PROPER DRAINAGE. DRAINAGE SHOULD BE CORRECTED AS NECESSARY TO INSURE PROPER TREE GROWTH AND SURVIVAL. THE FOLLOWING LEVEL OF NUTRIENT ELEMENTS IS RECOMMENDED FOR PROPER GROWTH:

## SEEDING SCHEDULE FOR LAWN & SLOPES (MAXIMUM 3:1):

DATE	TYPE	PLANTING RATE
AUG 15 - NOV 1	TALL FESCUE	300 LBS/ACRE
NOV 1 - MAR 1	TALL FESCUE AND ABRUZZI RYE	300 LBS/ACRE OR ANNUAL RYE
MAR 1 - APR 15	TALL FESCUE OR HARD FESCUE	300 LBS/ACRE
MAR 1 - JUL 15	HULLED COMMON BERMUDA GRASS OR HYBRID BERMUDA GRASS OR CENTIPEDE GRASS OR ZOYSIA GRASS OR ST. AUGUSTINE GRASS	200 LBS/ACRE
APR 15 - JUN 30	WEeping LOVE GRASS OR BAHIA GRASS	25 LBS/ACRE
JUL 1 - AUG 15	TALL FESCUE AND *** BROWNTOP MILLET *** OR SORGHUM-SUDAN HYBRIDS	120 LBS/ACRE 35 LBS/ACRE 30 LBS/ACRE



NO. DATE REVISION:

**STIPULATION FOR REUSE**  
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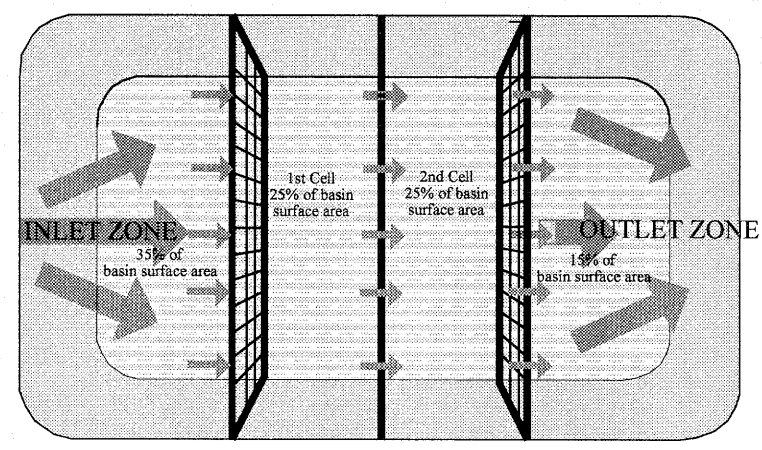
**KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021

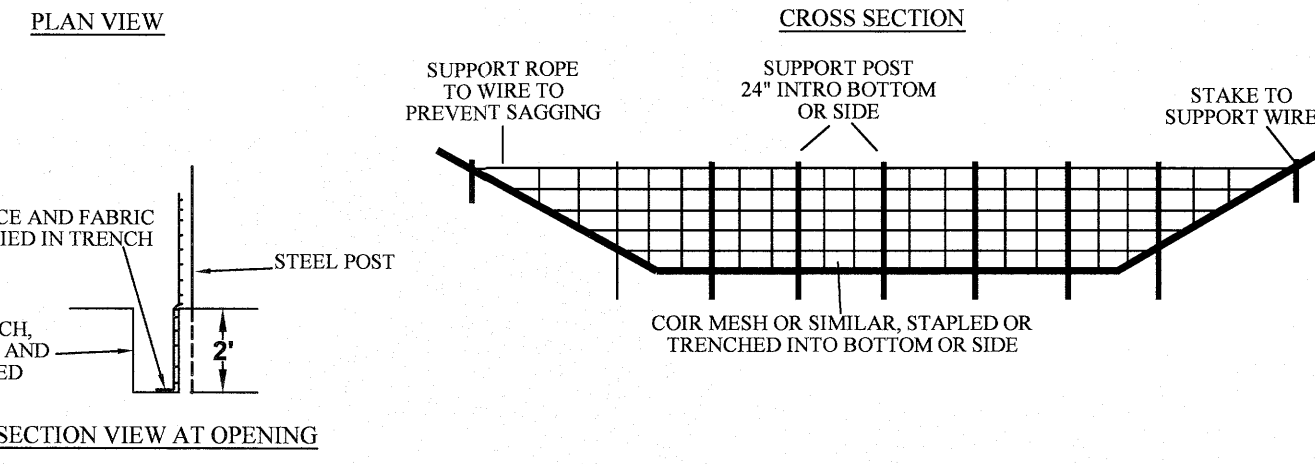
**LANDSCAPE NOTES AND DETAIL**

L2

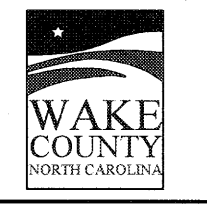




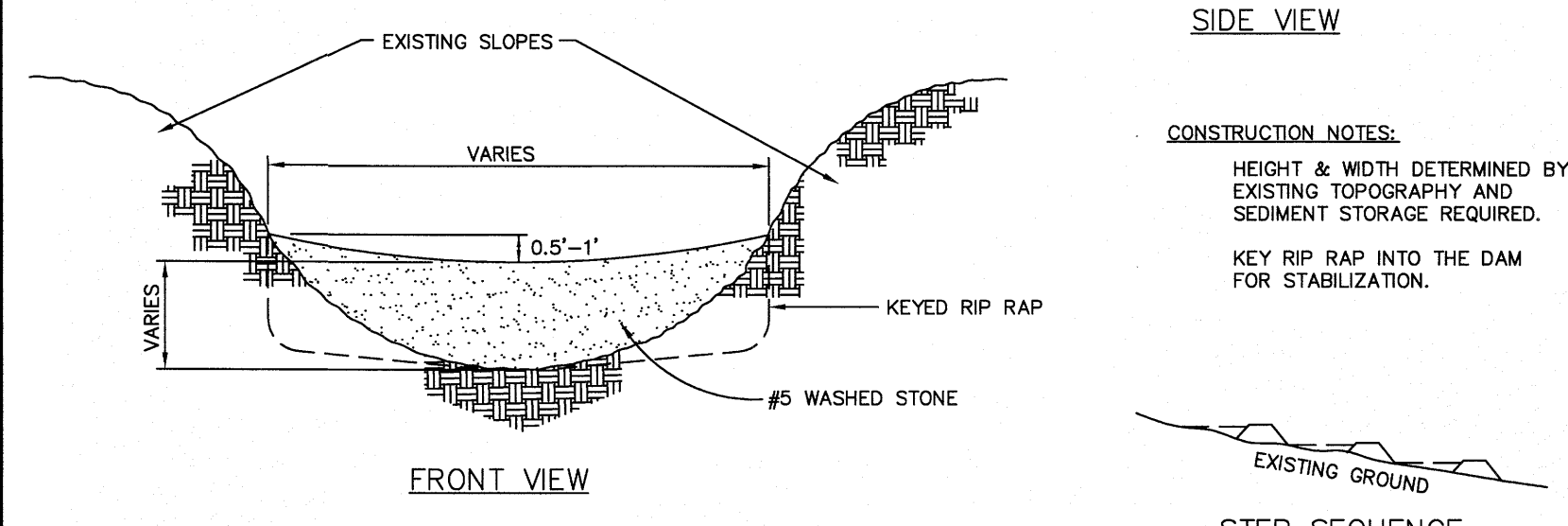
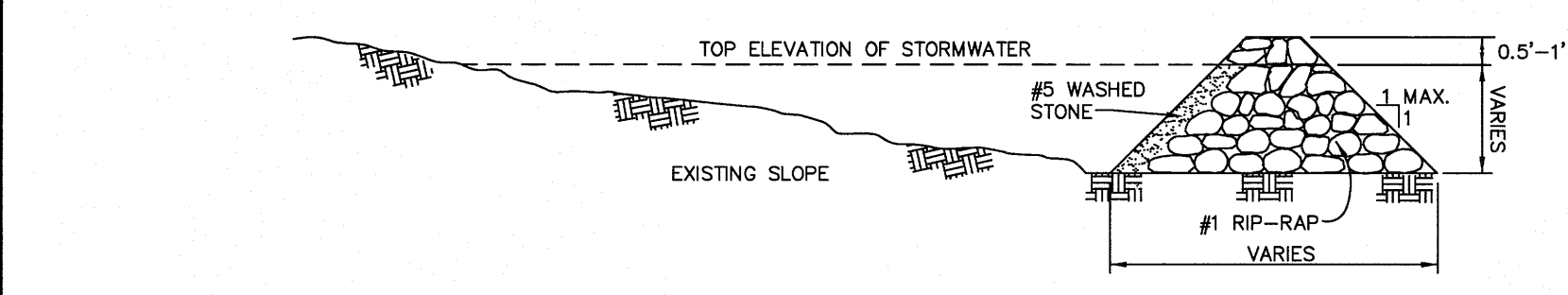
- NOTES:
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
  2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
  3. PROVIDE 3 BAFFLES (USE TWO IF ACCESS IS LESS THAN 20 FEET IN LENGTH), PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
  4. BAFFLES SHALL BE 70 G/MZ COIR EROSION BLANKET.
  5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS.
  6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL.



STANDARD BAFFLES DETAIL



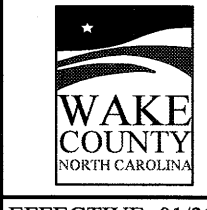
EFFECTIVE: 01/31/08



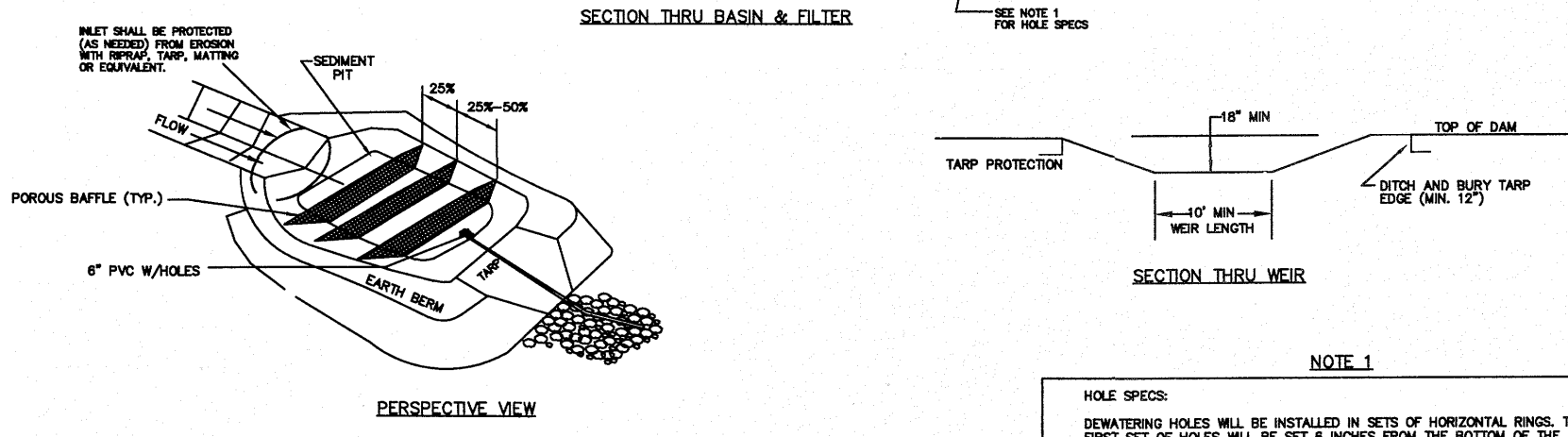
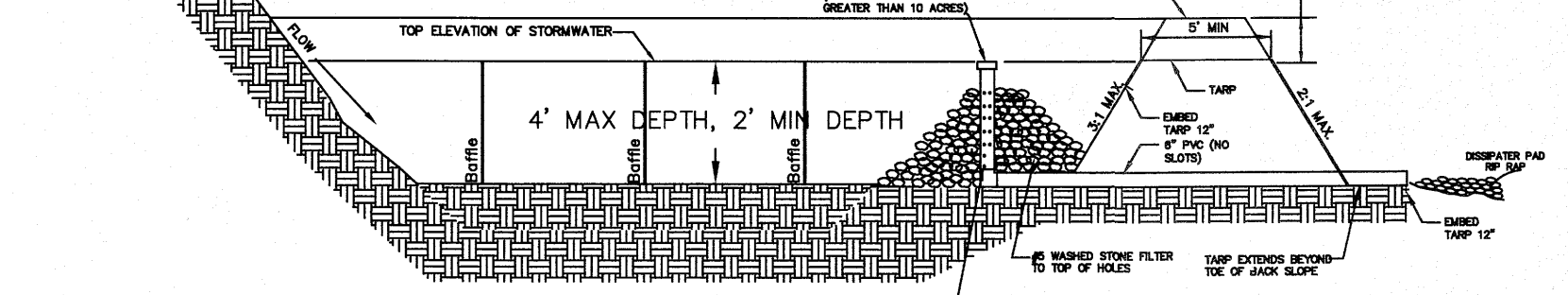
- CONSTRUCTION NOTES:
- HEIGHT & WIDTH DETERMINED BY EXISTING TOPOGRAPHY AND SEDIMENT STORAGE REQUIRED.
- KEY RIP RAP INTO THE DAM FOR STABILIZATION.

NOTE: REMOVE SEDIMENT ACCUMULATION FROM BEHIND CHECK DAMS TO PREVENT DAMAGE TO CHANNEL VEGETATION. FLOW SHOULD BE MAINTAINED THROUGH THE DAM.

STANDARD CHECK DAM

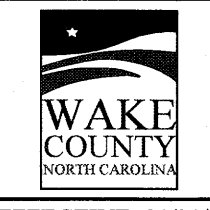


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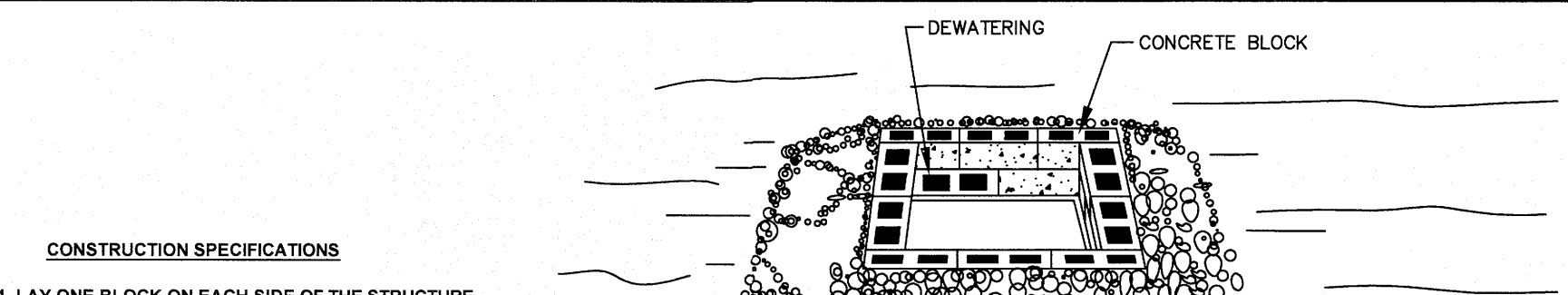


- GENERAL NOTES:
1. DRAW DOWN RISER & BARREL SHALL BE 6" SCH. 40 PVC WITH CLEAN-OUT CAP AND 3/4" HOLES SEE NOTE 1 FOR NUMBER AND SPACING OF HOLES. THE RISER SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TAPP SHALL BE ACCORDING TO AVAILABLE SPACE. IF AVAILABLE TAPP ARE TO BE USED, THEY SHALL BE DEVELOPED AT LEAST 12" OF DISTANCE FROM TAPP SHALL OVERLAP THE CONCRETE TAPP. THE TAPP SHALL BE 90 MIL HEAVY DUTY SLUR STOPPABLE OR EQUIVALENT FOR UV RESISTANCE.
  2. MAINTENANCE: SEDIMENT TO BE REMOVED AND PROPERLY DISPOSED OF WHEN BASIN IS FULL. GRAVEL FILTER BEHIND RISER SHOULD BE REPLACED AS NEEDED TO ENSURE OPERATIONAL.

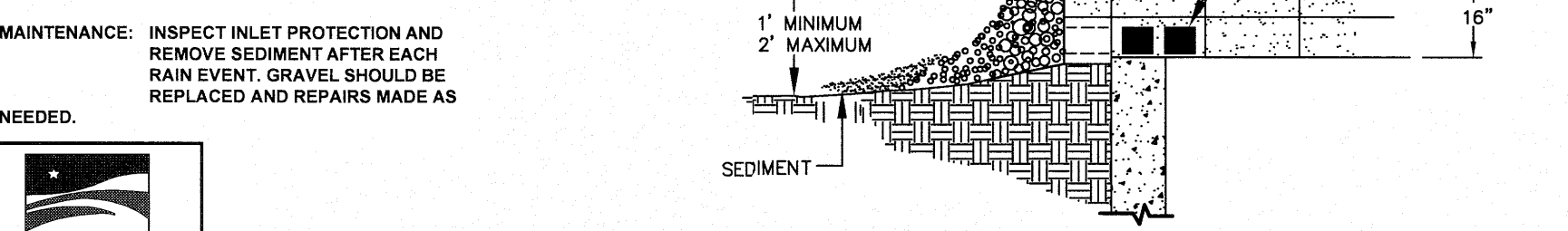
STANDARD CUSTOM BASIN



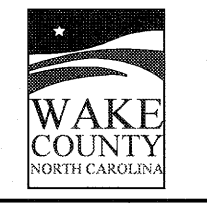
EFFECTIVE: 01/31/08



- CONSTRUCTION SPECIFICATIONS:
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE IN THE BOTTOM ROW TO ALLOW POOL DRAINAGE. THE FOUNDATION SHOULD BE EXCAVATED AT LEAST 2 INCHES BELOW THE CREST OF THE STORM DRAIN. PLACE THE BOTTOM ROW OF BLOCKS AGAINST THE EDGE OF THE STORM DRAIN FOR LATERAL SUPPORT AND TO AVOID WASHOUTS WHEN OVERFLOW OCCURS. IF NEEDED, GIVE LATERAL SUPPORT TO SUBSEQUENT ROWS BY PLACING 2x4 WOOD STUDS THROUGH BLOCK OPENINGS.
  2. CAREFULLY FIT HARDWARE CLOTH OR COMPARABLE WIRE MESH WITH 1/2 INCH OPENINGS OVER ALL BLOCK OPENINGS TO HOLD GRAVEL IN PLACE.
  3. USE CLEAN GRAVEL, 3/4 TO 1/2 INCH IN DIAMETER, PLACED 2 INCHES BELOW THE TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER AND SMOOTH IT TO AN EVEN GRADE. DOT #57 WASHED STONE IS RECOMMENDED.

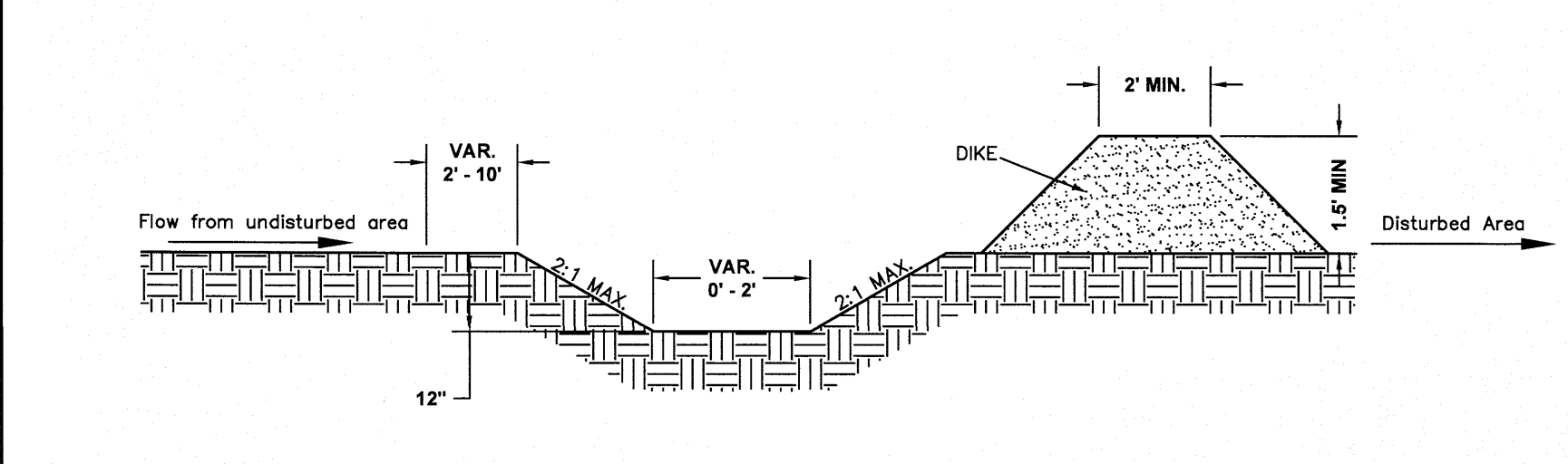


STANDARD BLOCK & GRAVEL DROP INLET PROTECTION

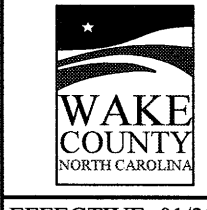


EFFECTIVE: 01/31/08

- NOTES:
1. DIVERSION TO BE USED UPSLOPE OF A CONSTRUCTION SITE TO PREVENT STORM RUNOFF FROM ENTERING THE DISTURBED AREA.
  2. IMMEDIATELY LINE AND STABILIZE BEFORE ANY DOWNSLOPE GRADING BEGINS (STABILIZATION MUST OCCUR BEFORE ISSUANCE OF A CERTIFICATE OF COMPLIANCE). STABILIZATION METHOD IS BASED ON VELOCITY OF OFFSITE DRAINAGE.
  3. DIVERSIONS SHOULD ONLY BE USED FOR DRAINAGES 5 ACRES OR LESS.
  4. ANY SEDIMENT LOADED WATER PRIOR TO STABILIZATION OF THE DIVERSION MUST BE DIVERTED INTO AN APPROVED EROSION AND SEDIMENT CONTROL BMP. CLEAN WATER SHOULD EMPTY INTO AN APPROVED OUTLET DEVICE.

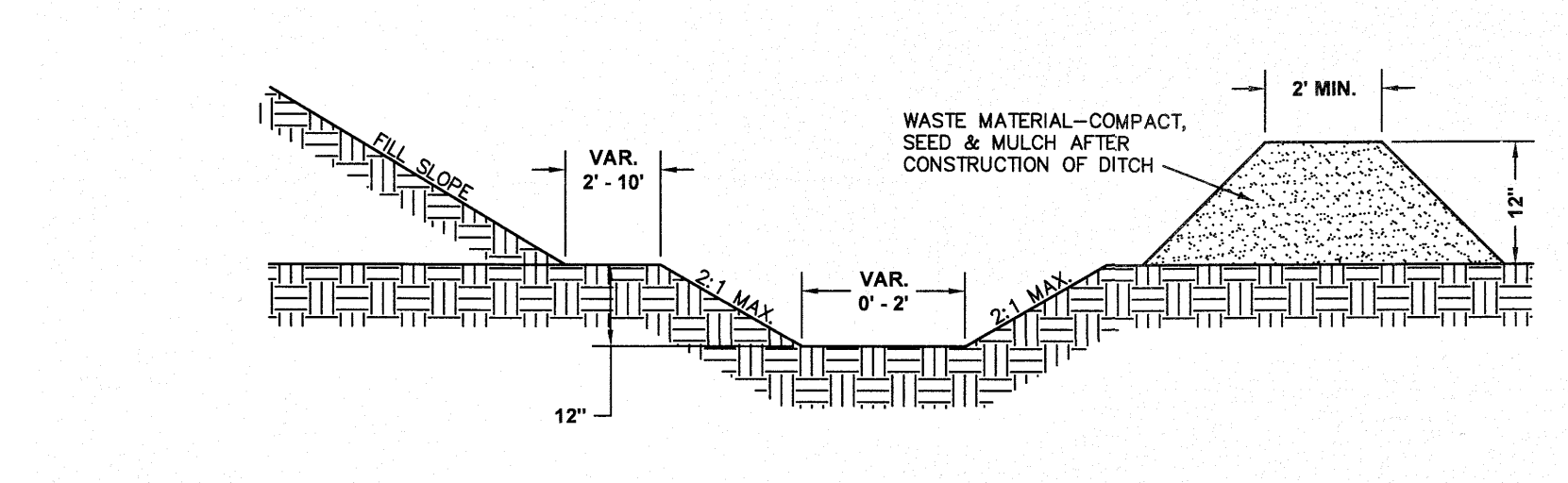


STANDARD CLEAN WATER DIVERSION

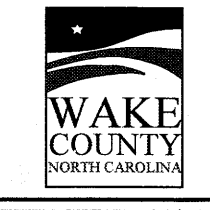


EFFECTIVE: 01/31/08

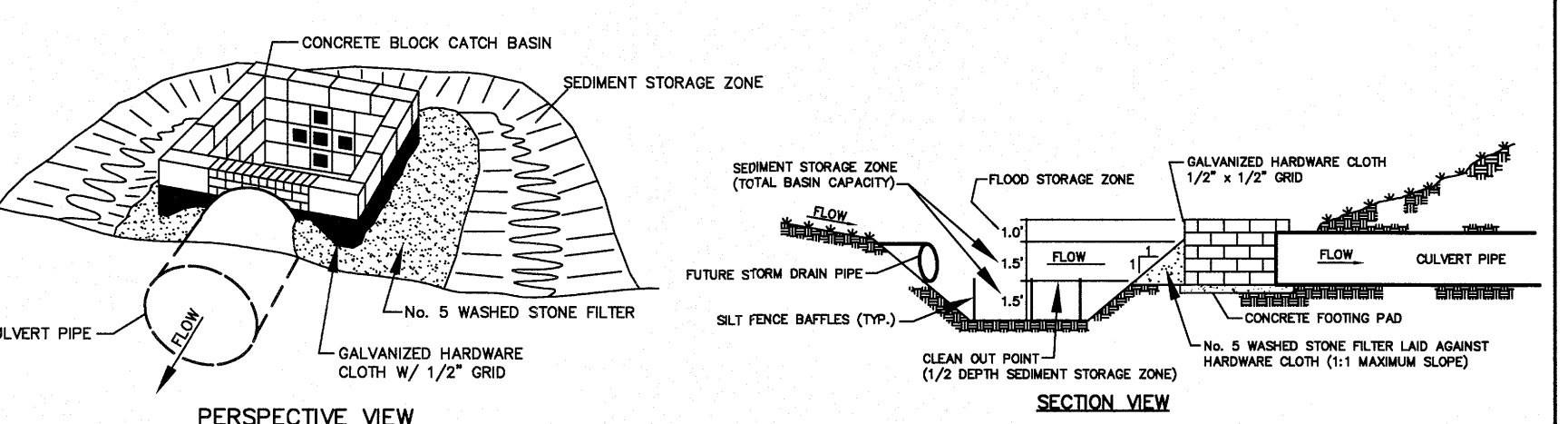
- NOTES:
1. TEMPORARY DIVERSION DITCH TO BE USED TO INTERCEPT FLOW AND/OR DIVERT TO A SEDIMENT CONTROL MEASURE OR BMP.
  2. SILT SHALL BE REMOVED WHEN DITCH IS ONE-HALF FULL.
  3. DITCH SHALL BE RECONSTRUCTED WHEN DAMAGED BY EQUIPMENT OR COVERED BY FILL.
  4. STABILIZE DIVERSION DITCH BERM WITH TEMPORARY SEEDING, MULCH WITH TAC, AND/OR EROSION CONTROL NETTING.



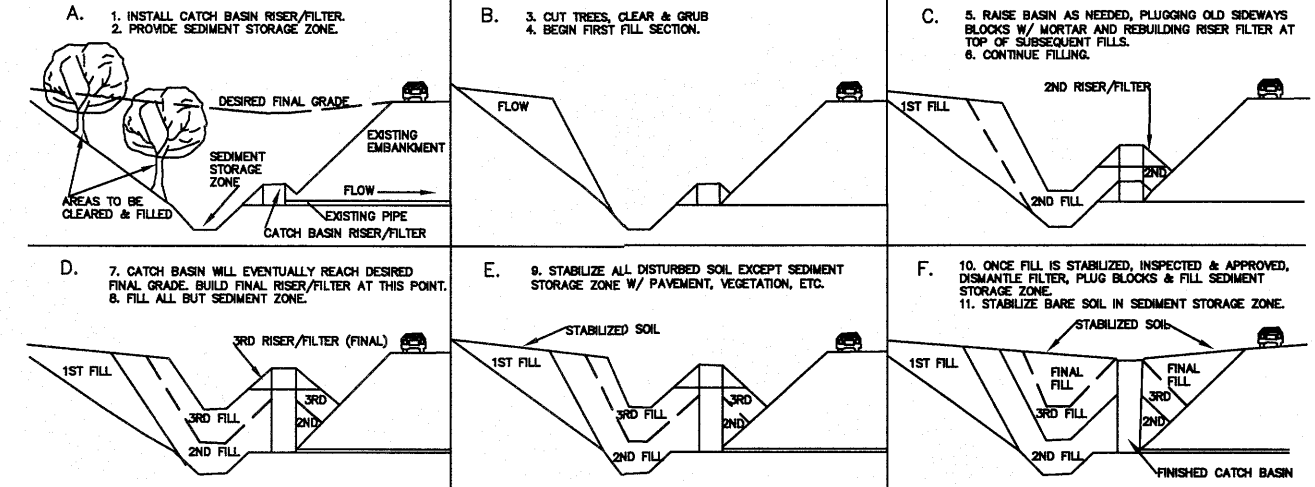
STANDARD TEMPORARY DIVERSION DITCH



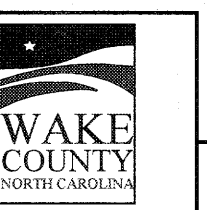
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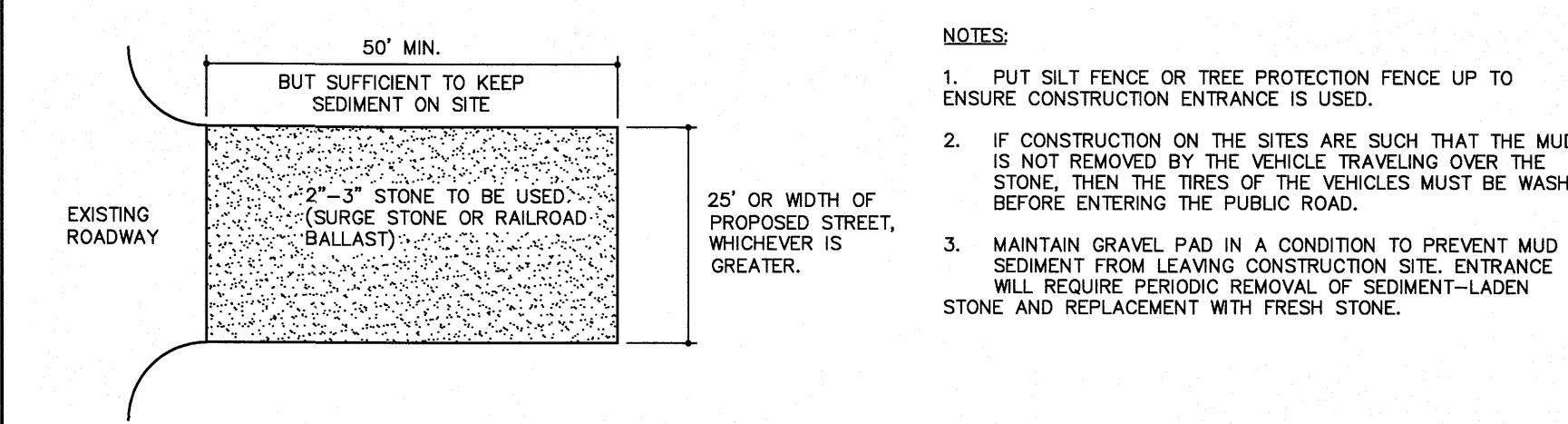
USE OF CATCH BASIN RISER/FILTER ON FILL SITES



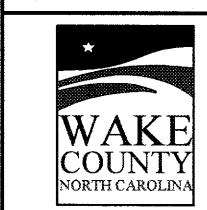
STANDARD CATCH BASIN RISER/FILTER



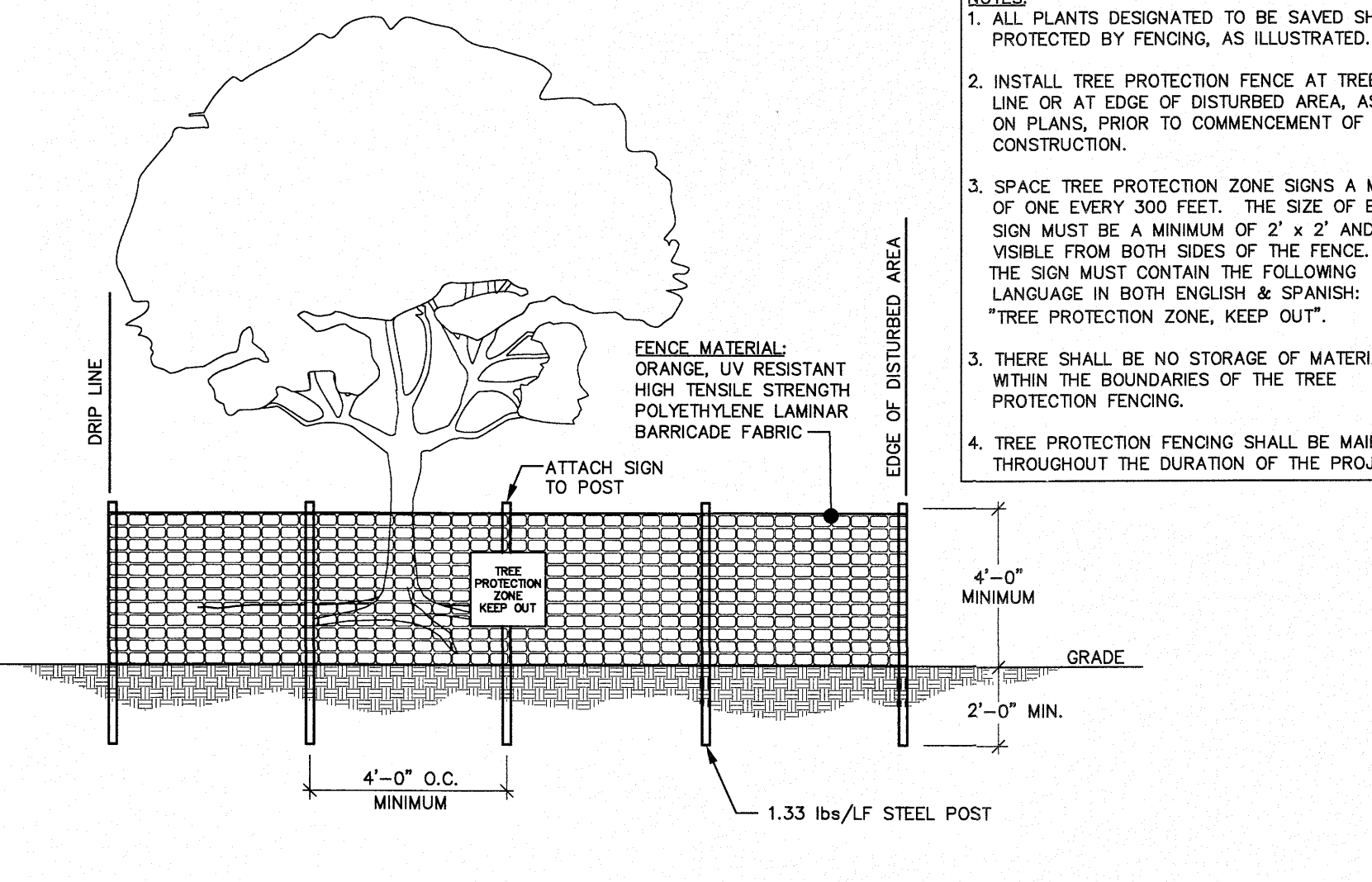
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STANDARD CONSTRUCTION ENTRANCE

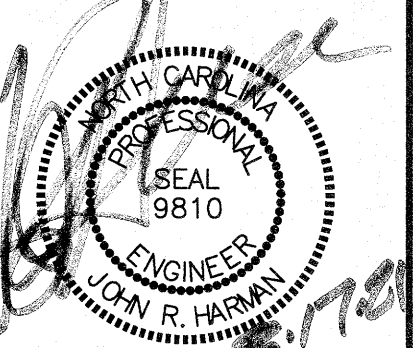
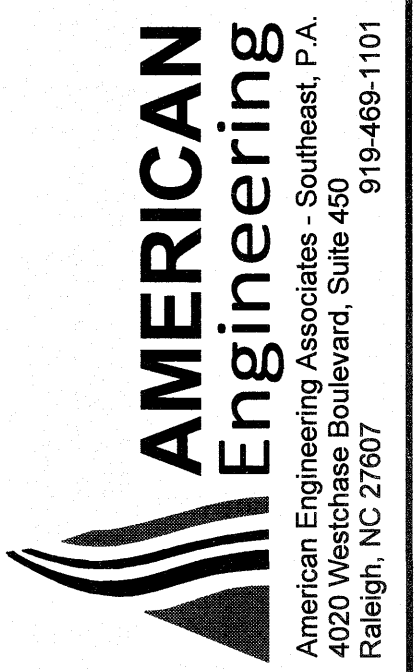


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TREE PROTECTION FENCE

- NOTES:
1. ALL PLANTS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY FENCING, AS ILLUSTRATED.
  2. INSTALL TREE PROTECTION FENCE AT TREE DRIP LINE OR AT EDGE OF DISTURBED AREA, AS SHOWN ON PLANS, PRIOR TO COMMENCEMENT OF CONSTRUCTION.
  3. SPACE TREE PROTECTION ZONE SIGNS A MINIMUM OF ONE EVERY 300 FEET. THE SIZE OF EACH SIGN MUST BE A MINIMUM OF 2' x 2' AND BE VISIBLE FROM BOTH SIDES OF THE FENCE. THE SIGN MUST CONTAIN THE FOLLOWING LANGUAGE IN BOTH ENGLISH & SPANISH: "TREE PROTECTION ZONE, KEEP OUT".
  3. THERE SHALL BE NO STORAGE OF MATERIAL WITHIN THE BOUNDARIES OF THE TREE PROTECTION FENCING.
  4. TREE PROTECTION FENCING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT.



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NO.	DATE	REVISION

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KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

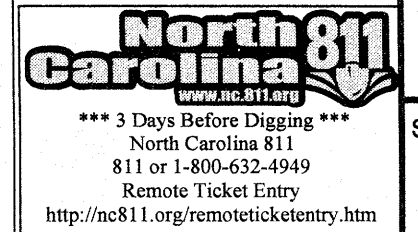
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CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
KALAS FALLS CIVIL DETAILS  
SHEET NO.:  
CD1

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

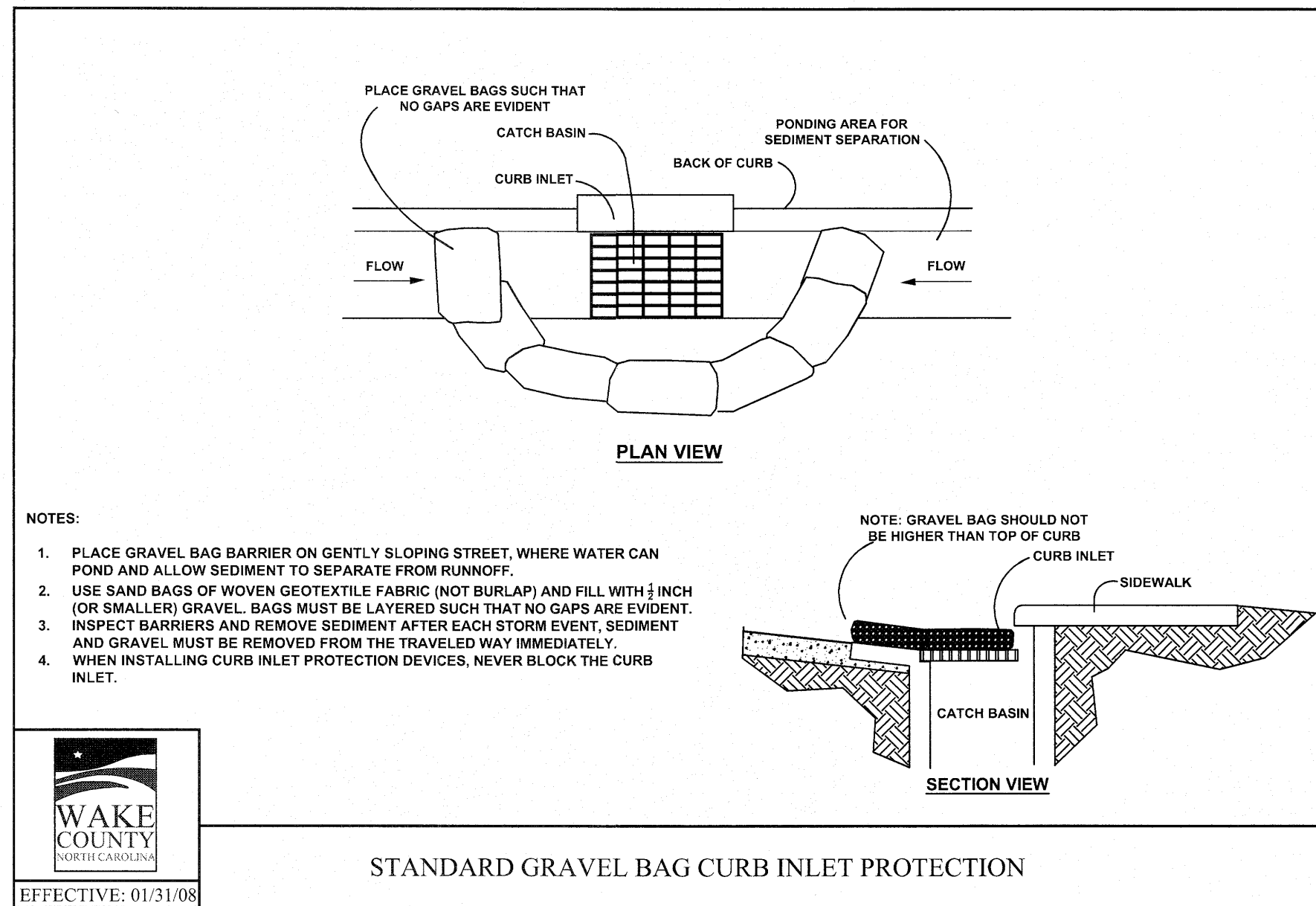
Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_

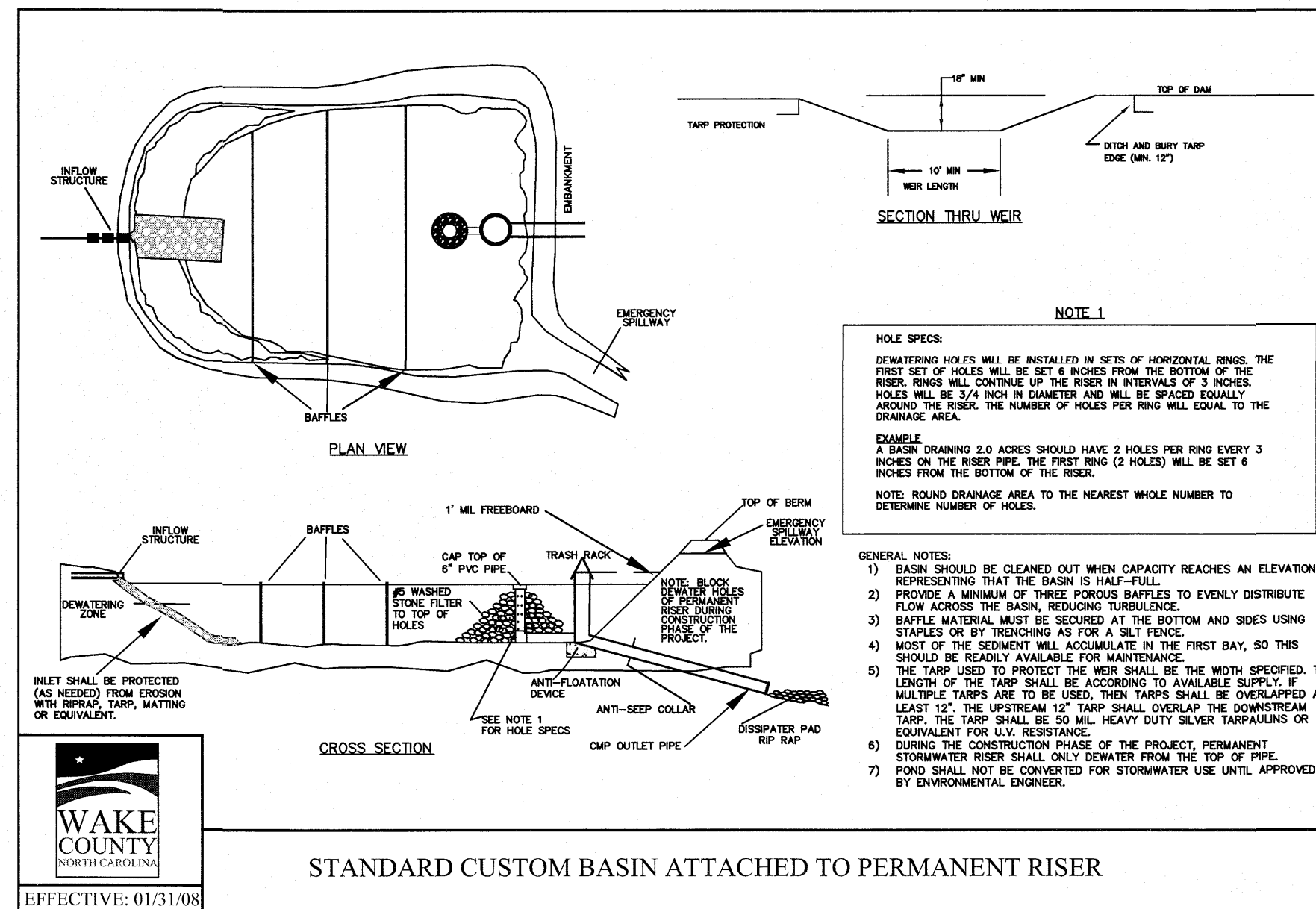
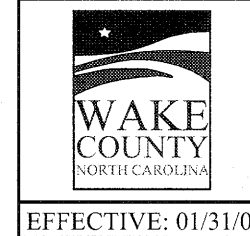
Raleigh Water Review Officer



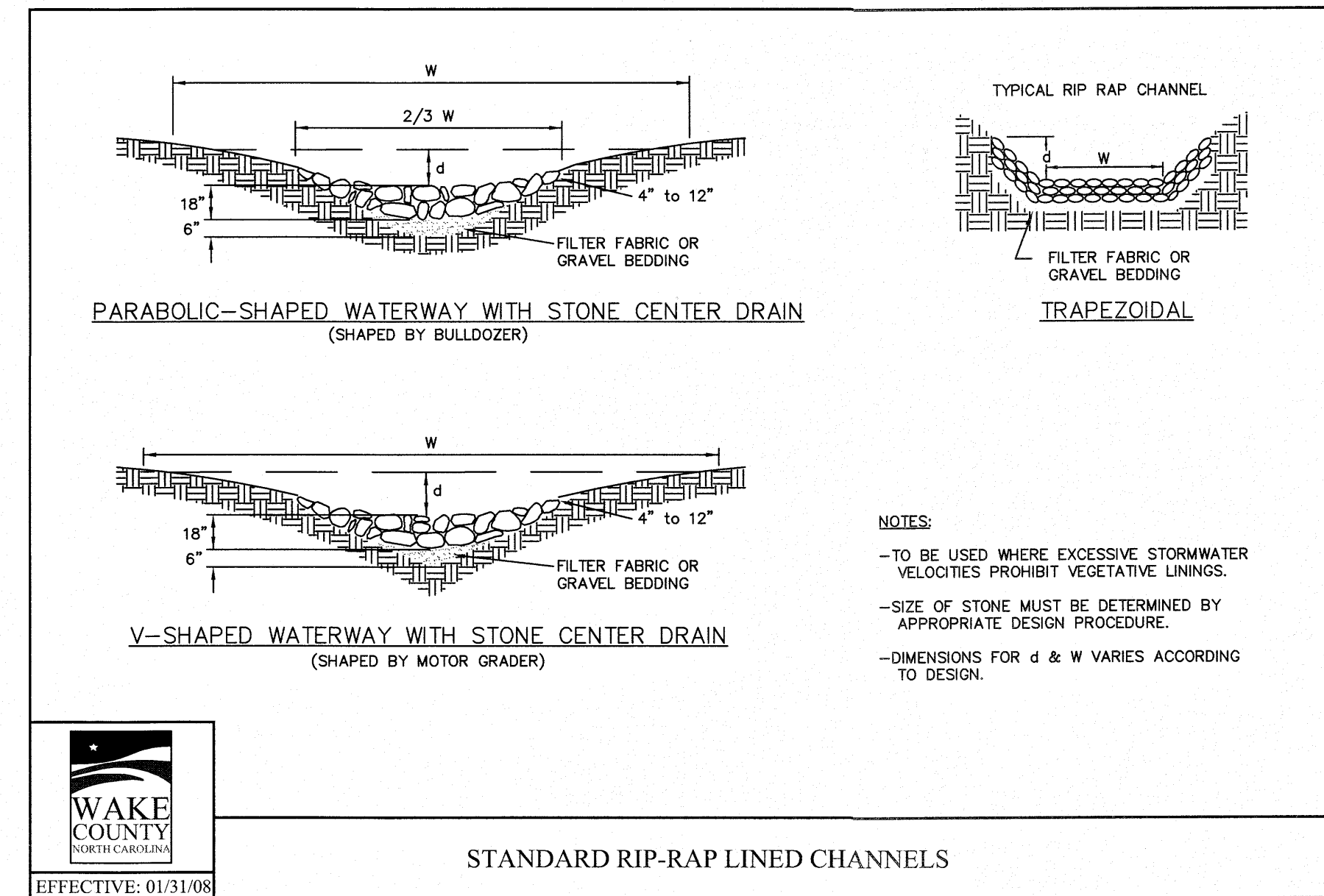
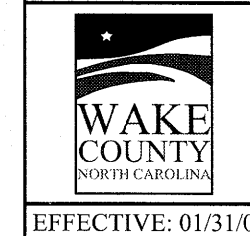




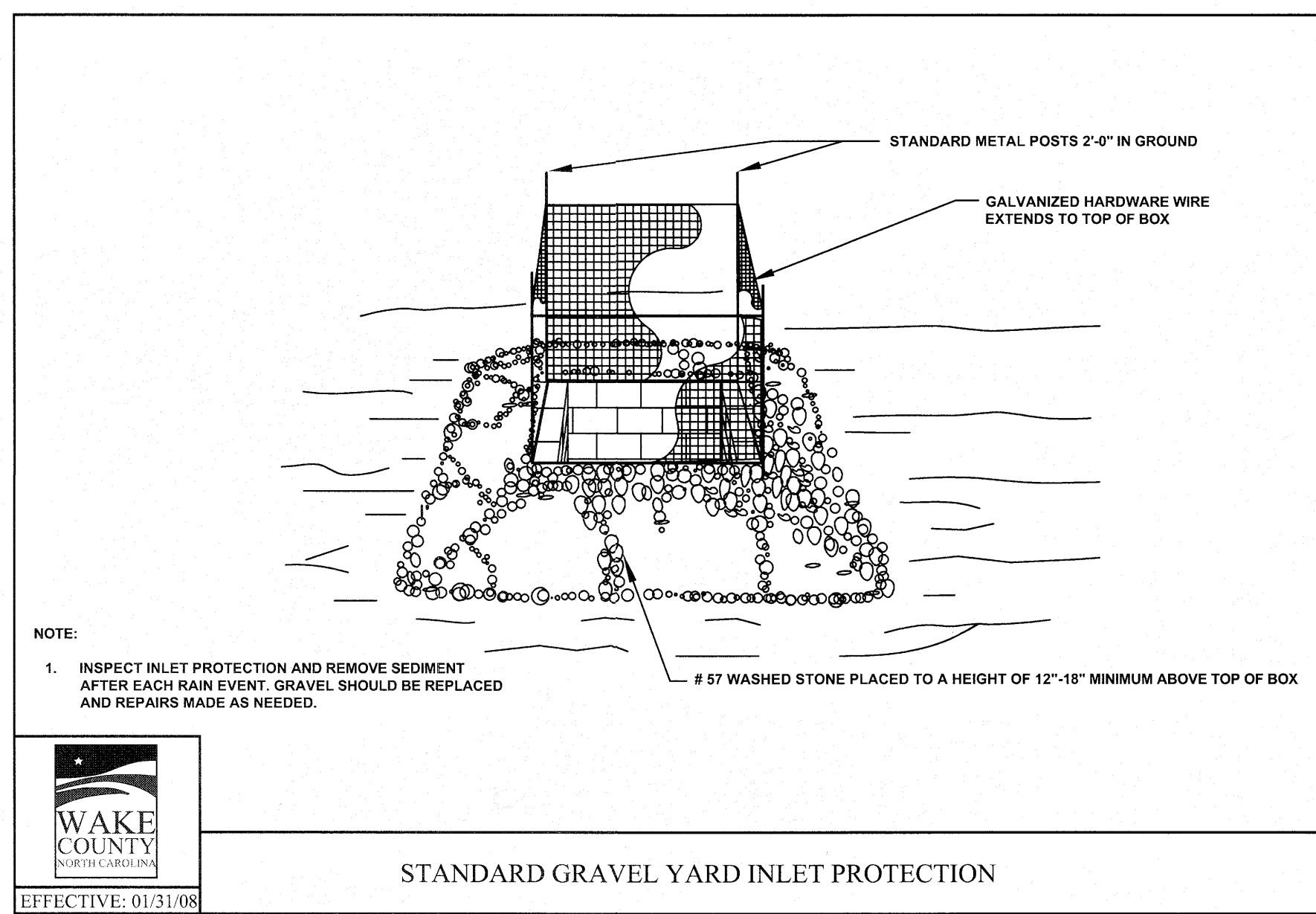
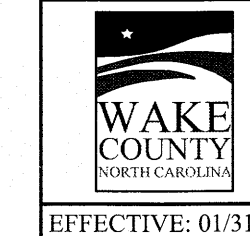
STANDARD GRAVEL BAG CURB INLET PROTECTION



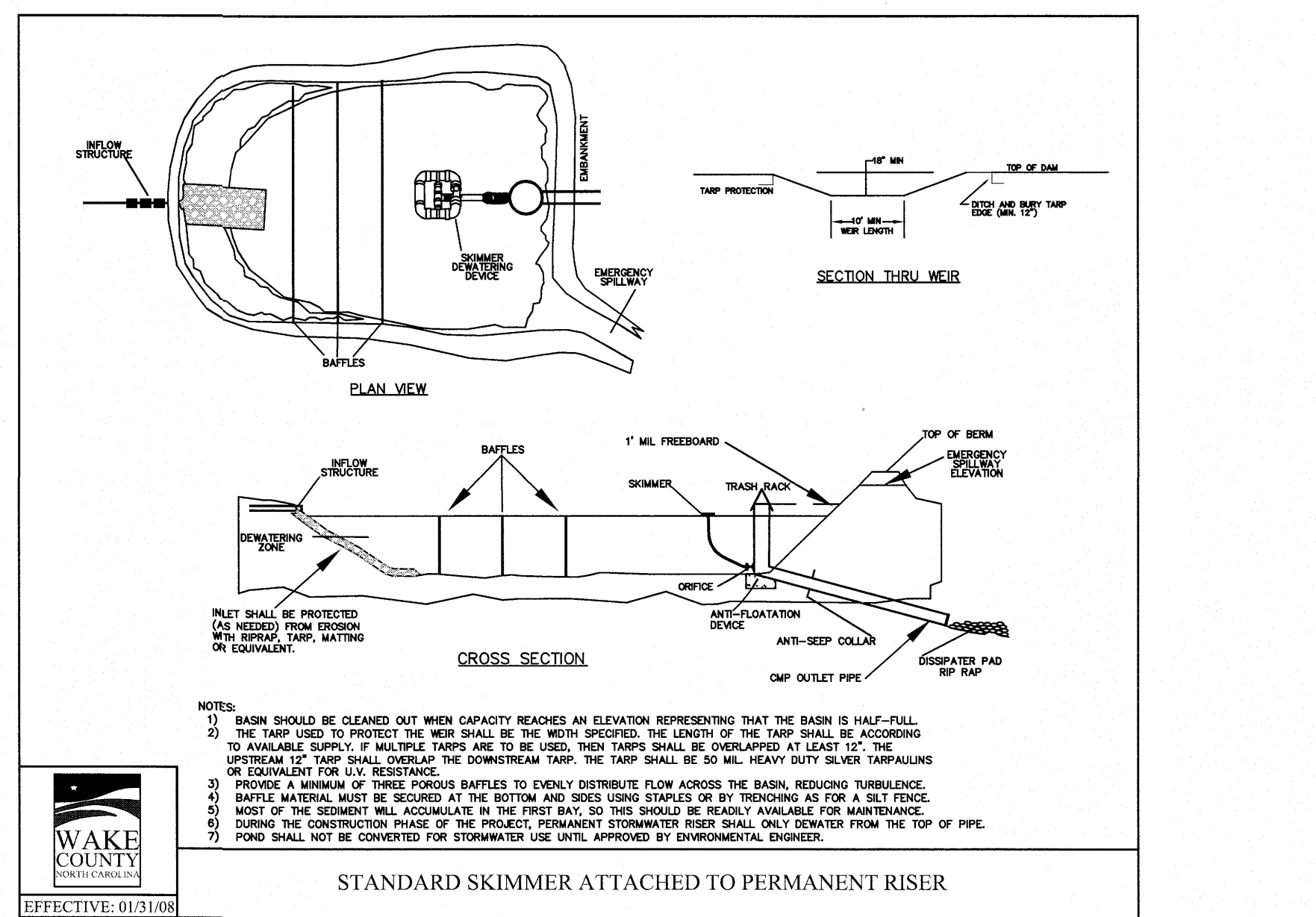
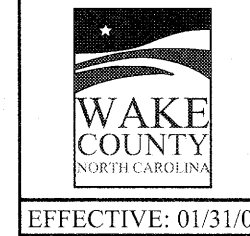
STANDARD CUSTOM BASIN ATTACHED TO PERMANENT RISER



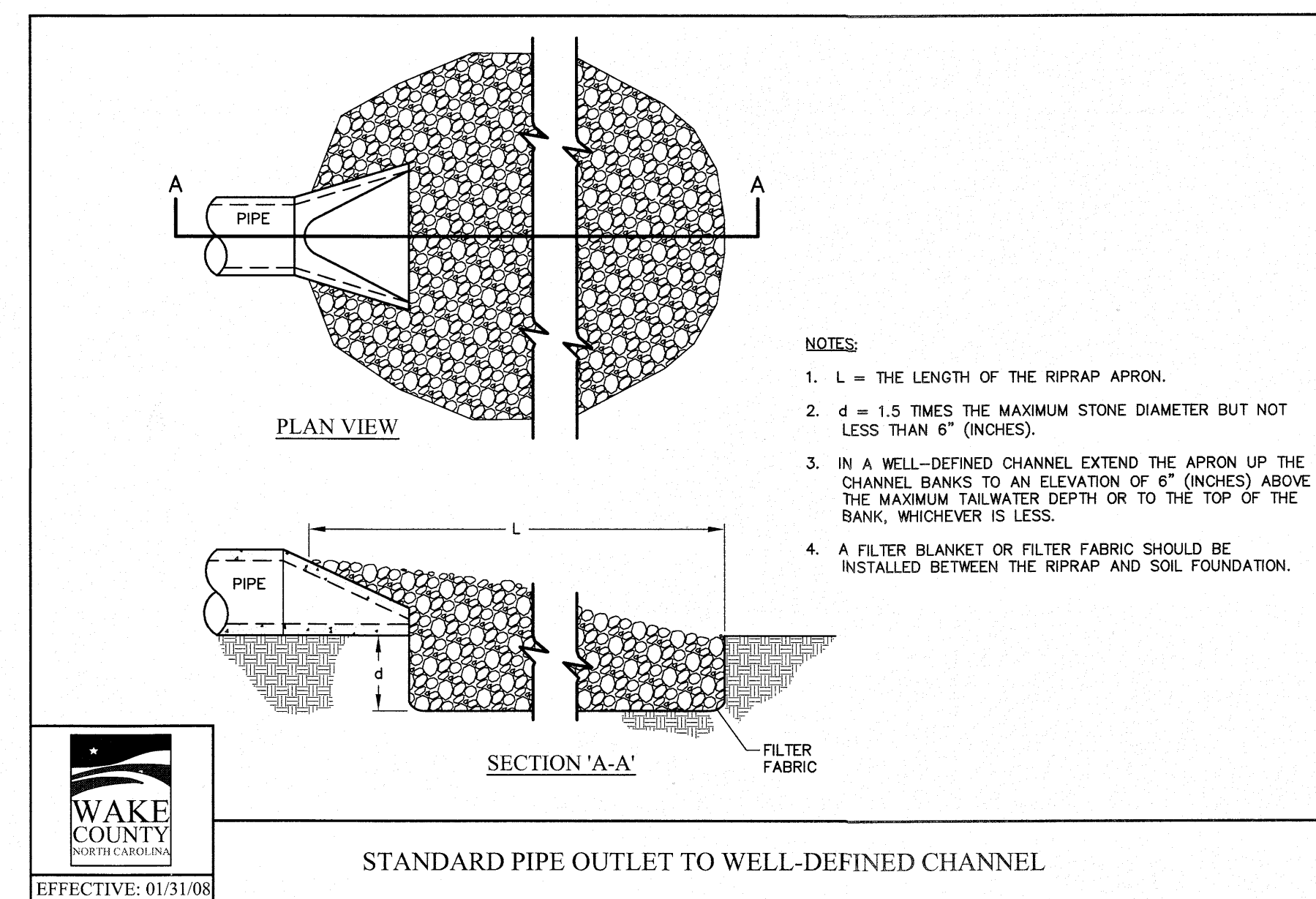
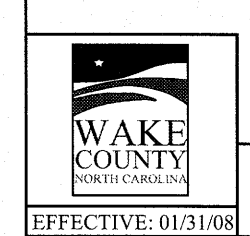
STANDARD RIP-RAP LINED CHANNELS



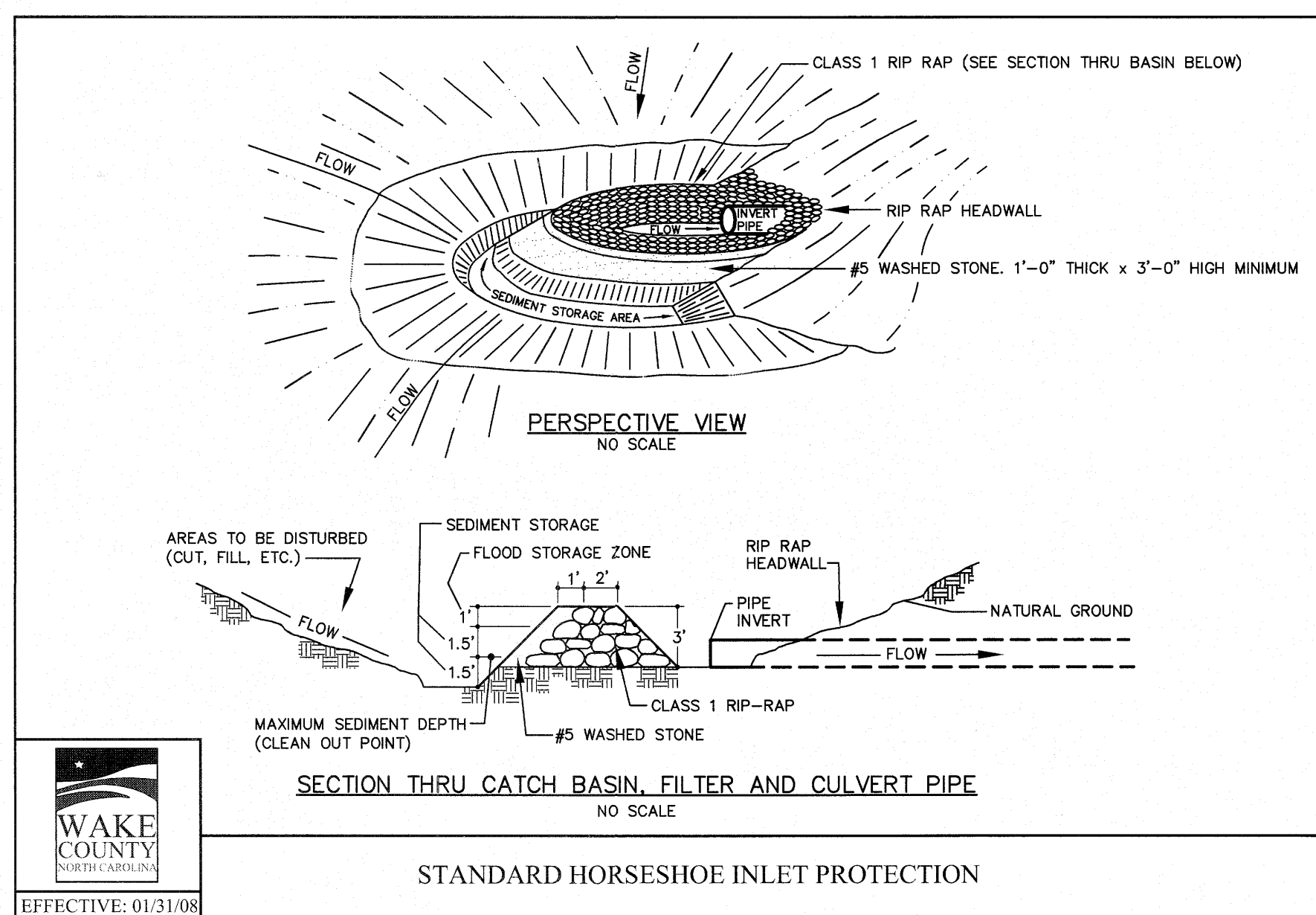
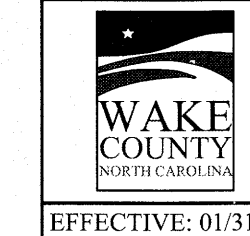
STANDARD GRAVEL YARD INLET PROTECTION



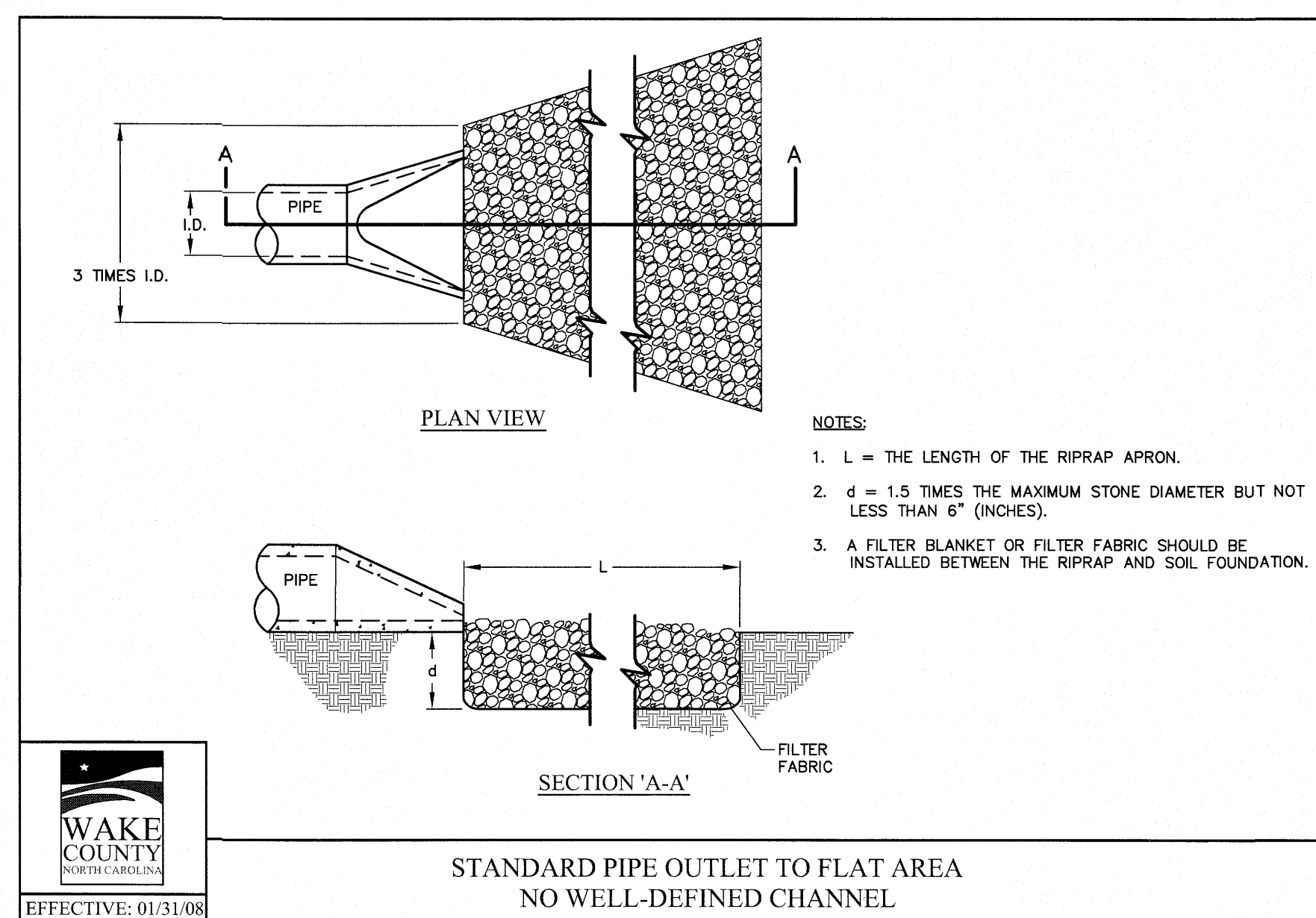
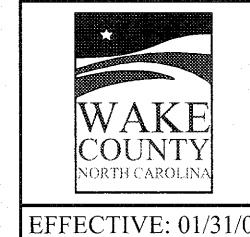
STANDARD SKIMMER ATTACHED TO PERMANENT RISER



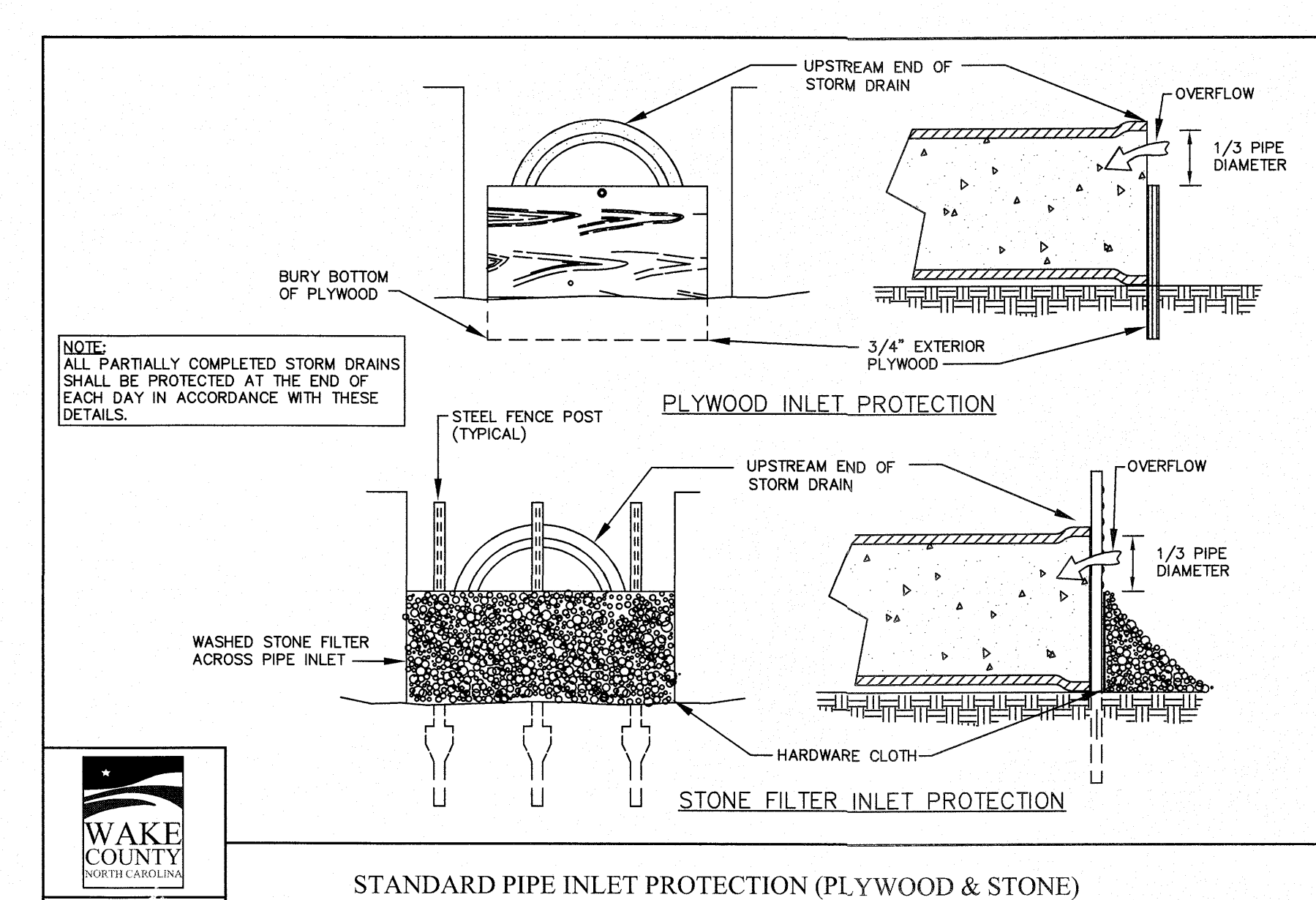
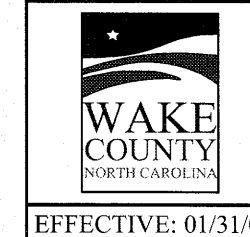
STANDARD PIPE OUTLET TO WELL-DEFINED CHANNEL



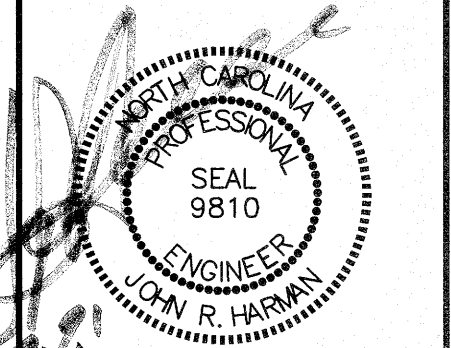
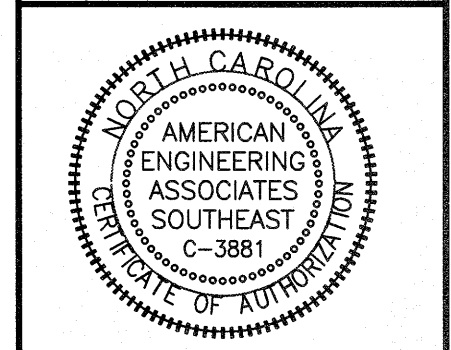
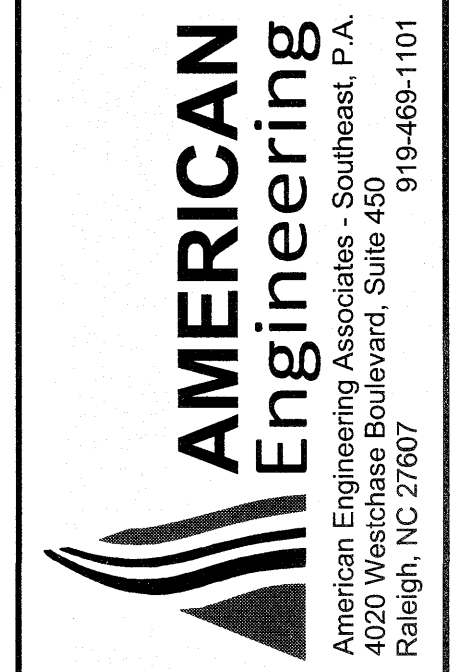
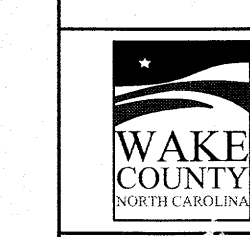
STANDARD HORSESHOE INLET PROTECTION



STANDARD PIPE OUTLET TO FLAT AREA NO WELL-DEFINED CHANNEL



STANDARD PIPE INLET PROTECTION (PLYWOOD & STONE)



DETAIL SELECTION ONLY

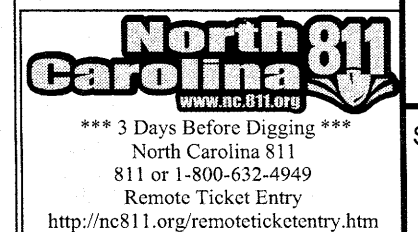
NO.	DATE	REVISION

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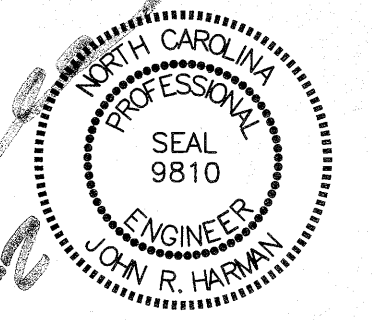
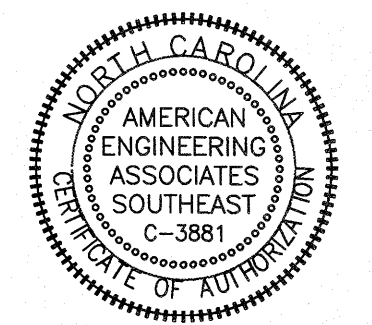
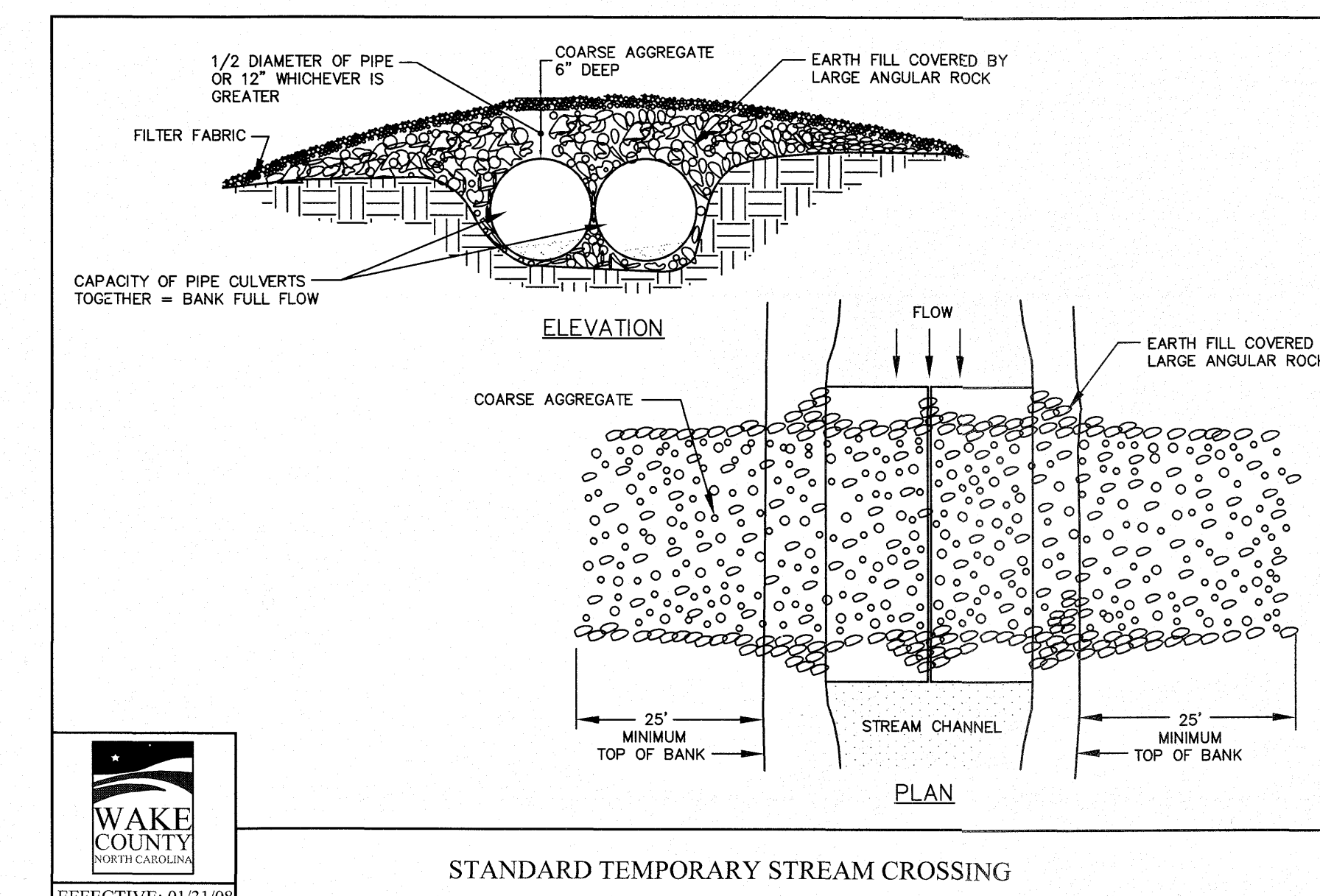
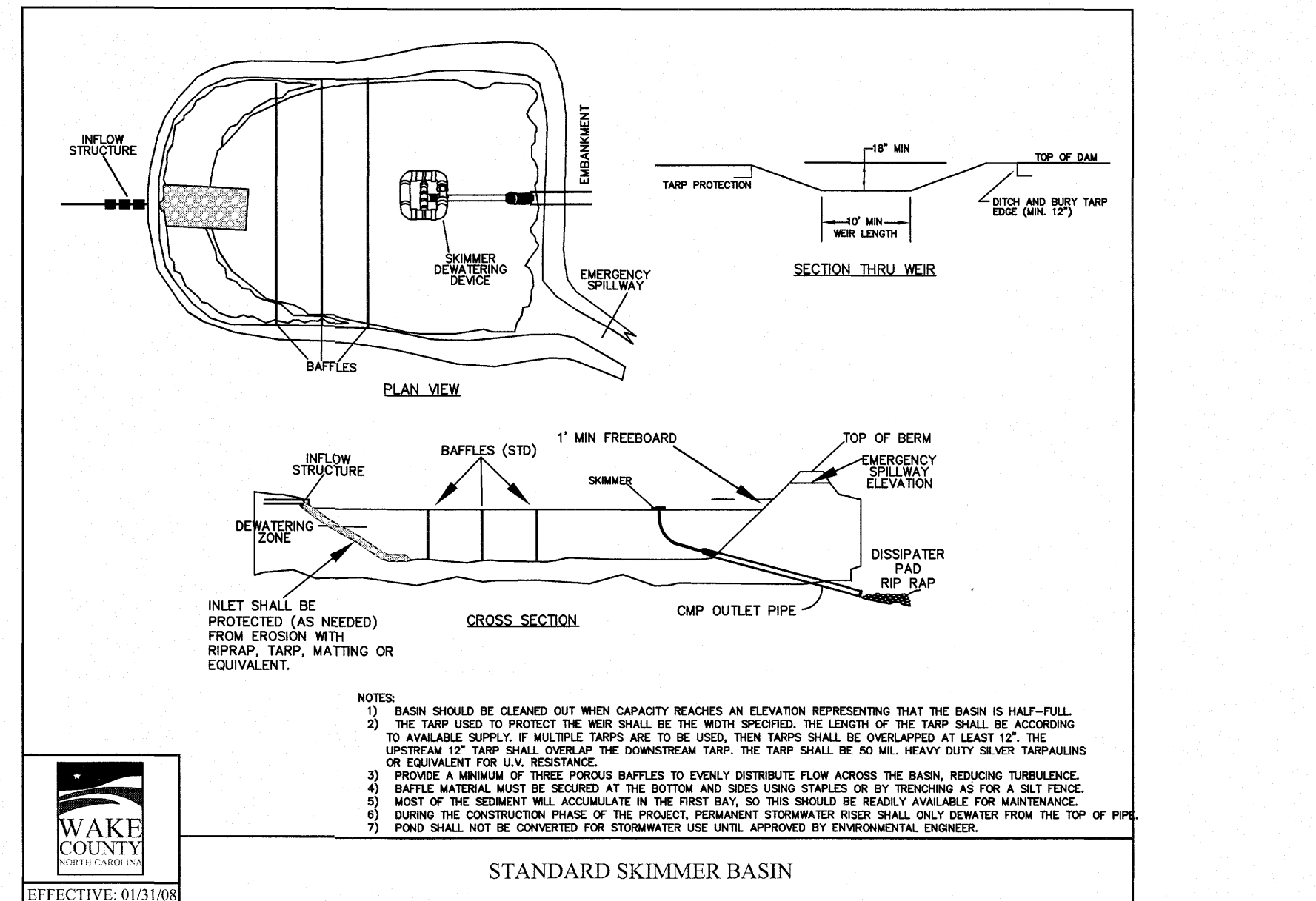
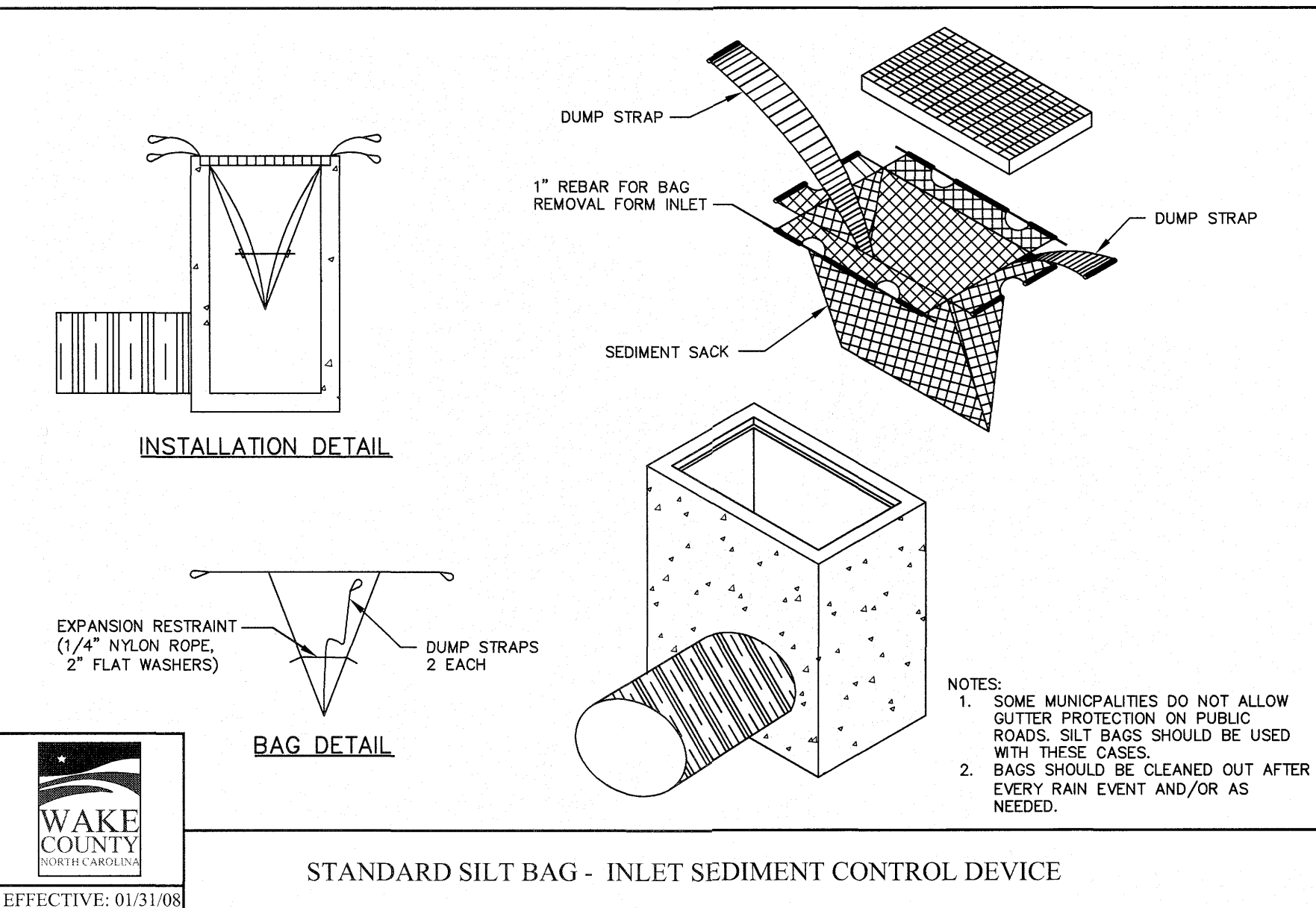
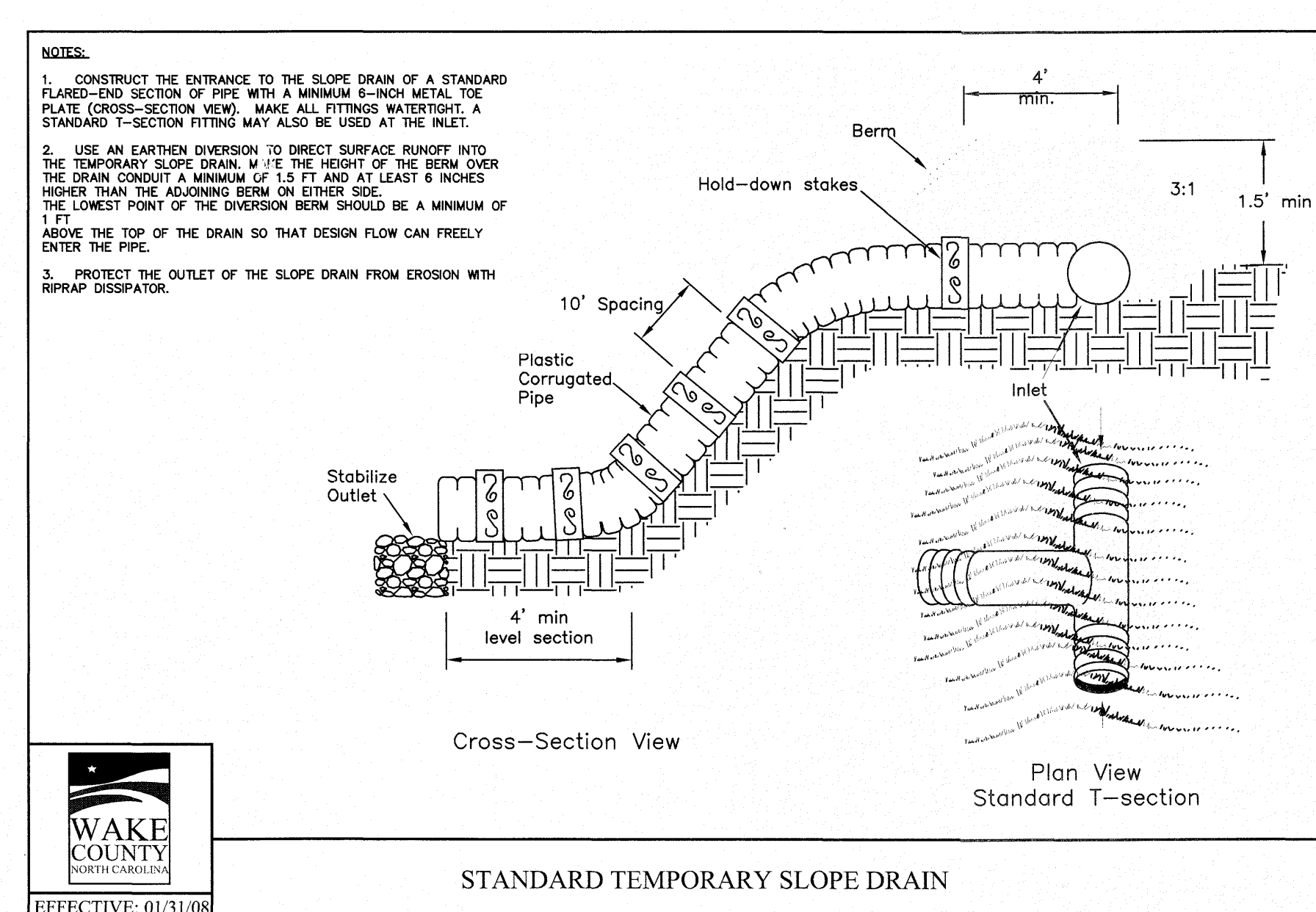
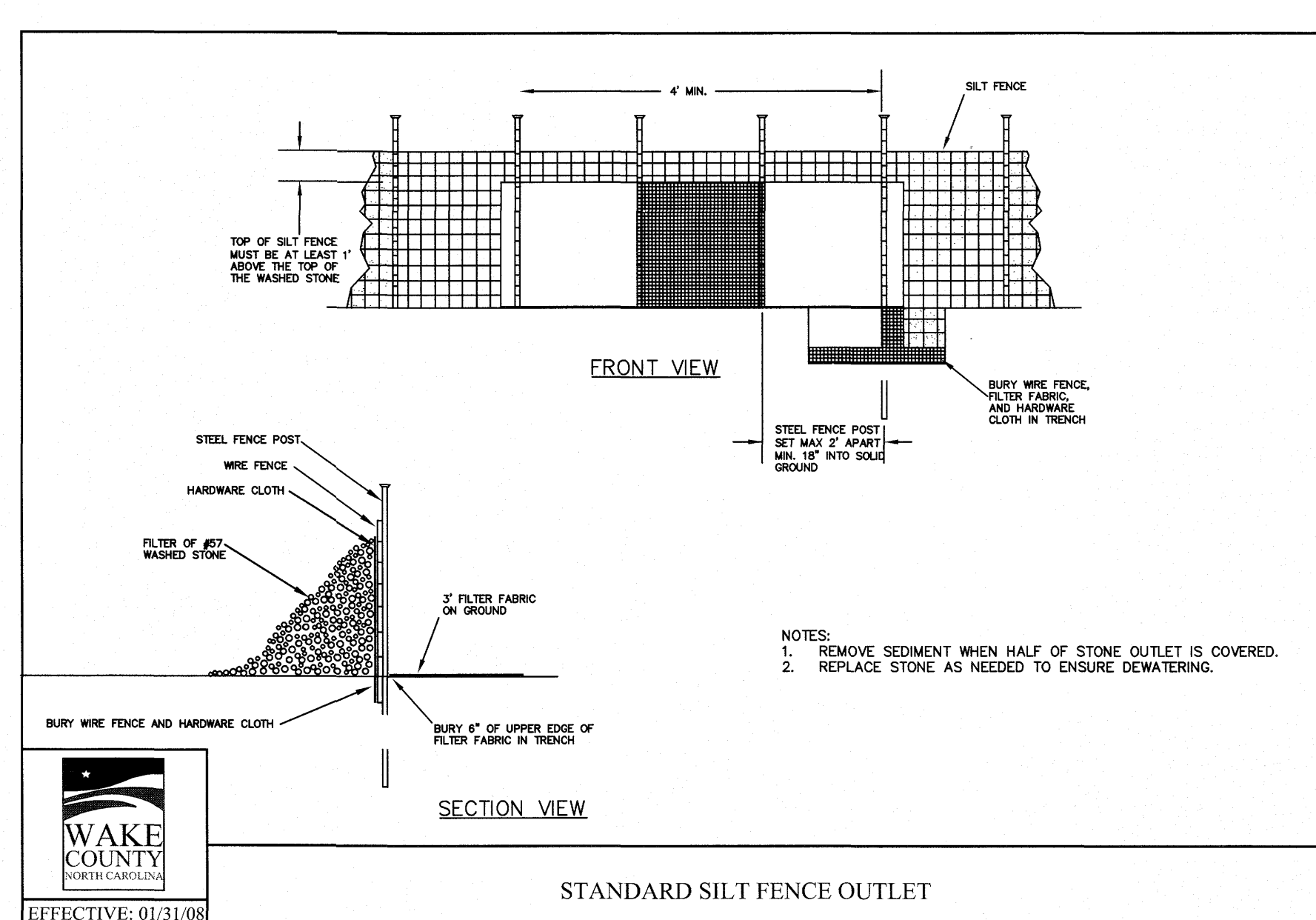
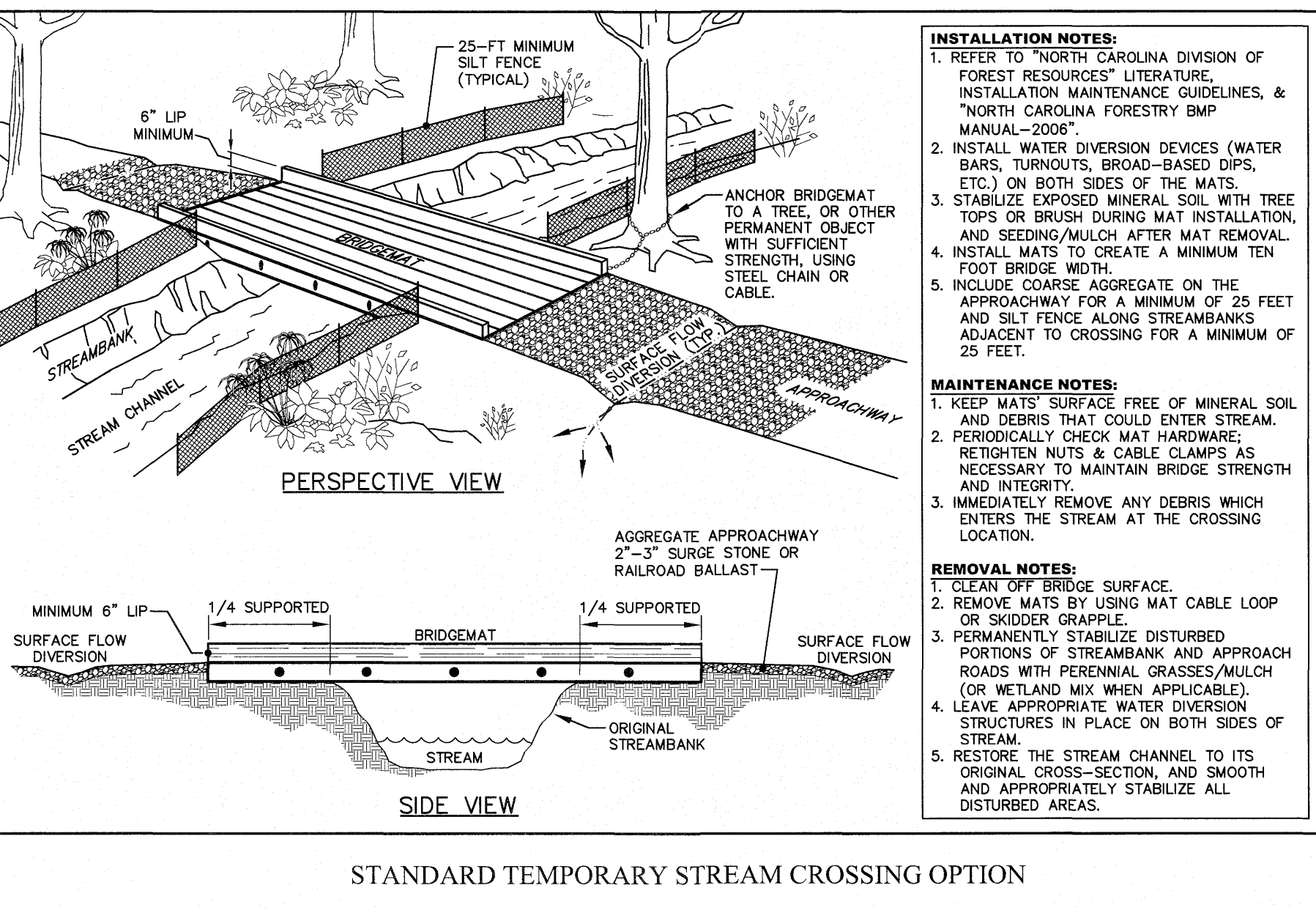
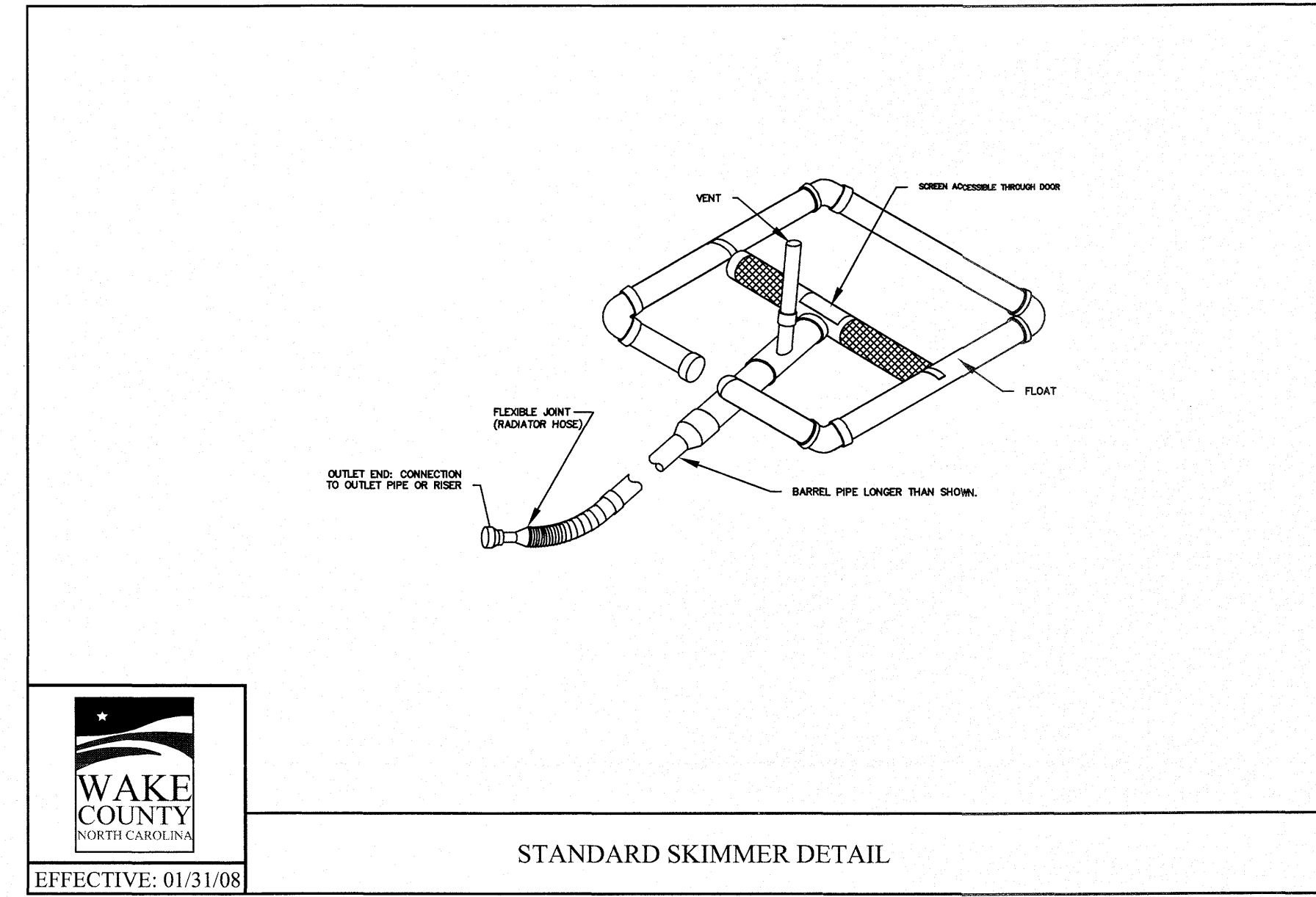
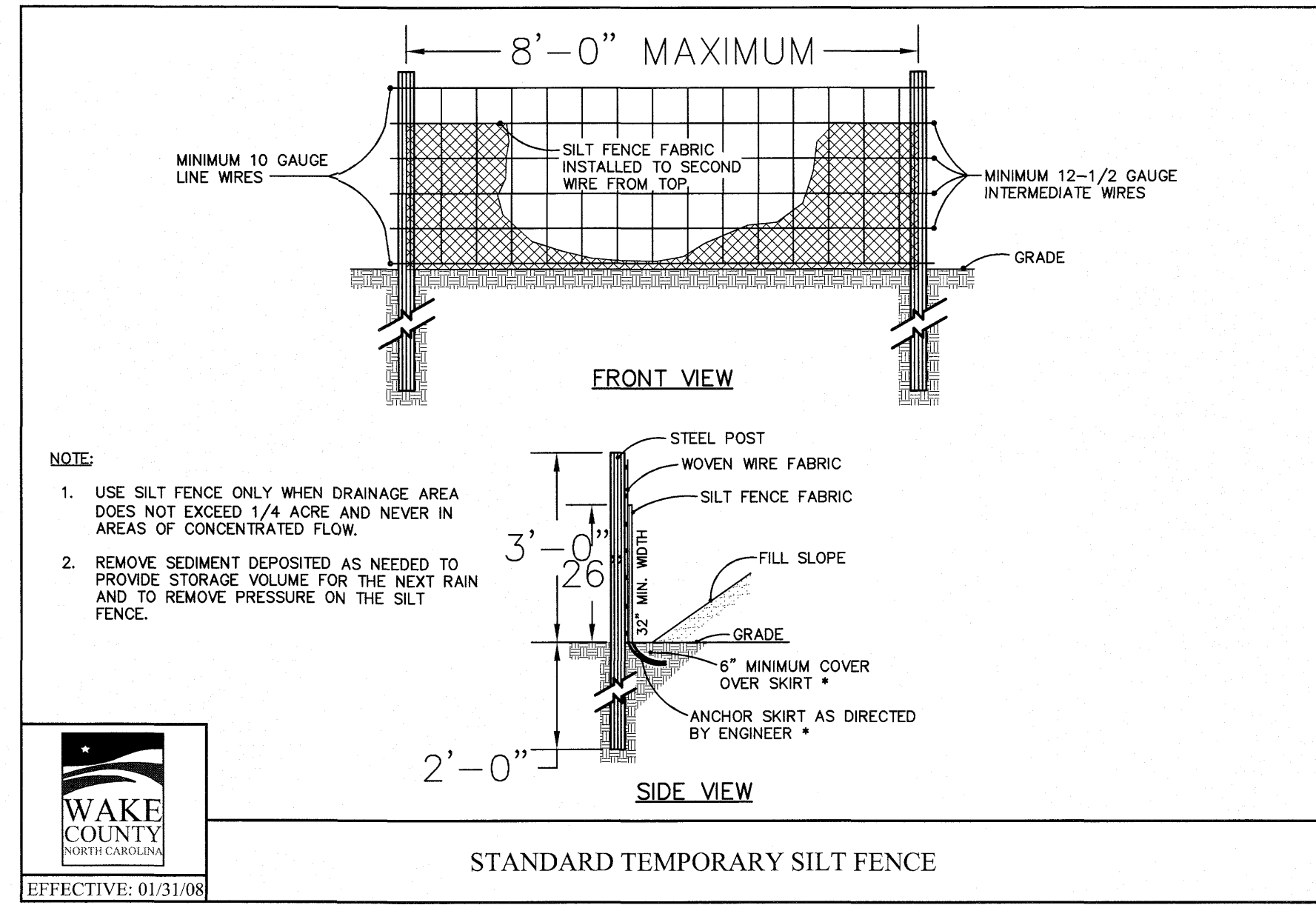
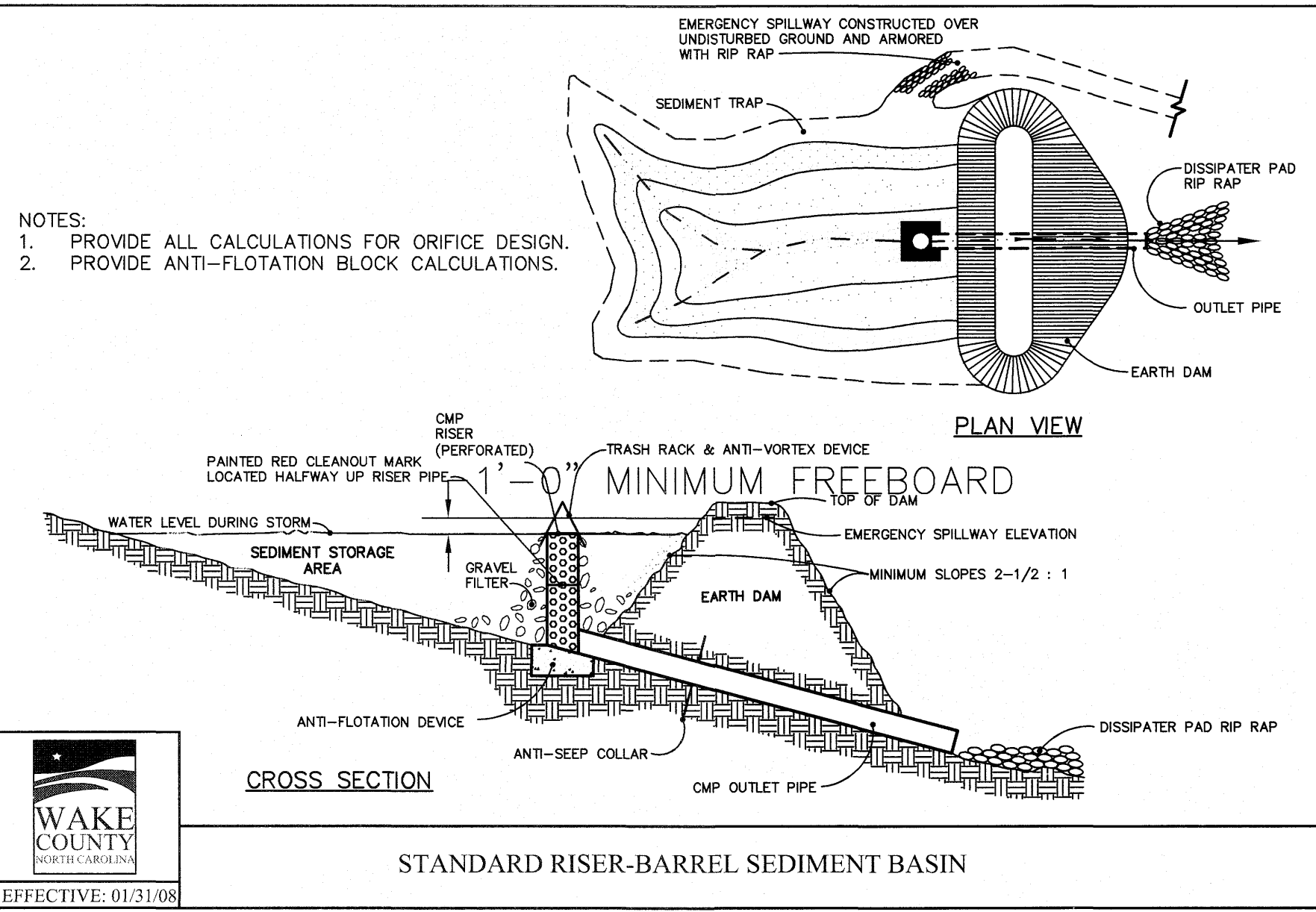
KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
KALAS FALLS CIVIL DETAILS  
SHEET NO.: CD2

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Raleigh Water Review Officer







DETAIL SELECTION ONLY

NO.	DATE	REVISION

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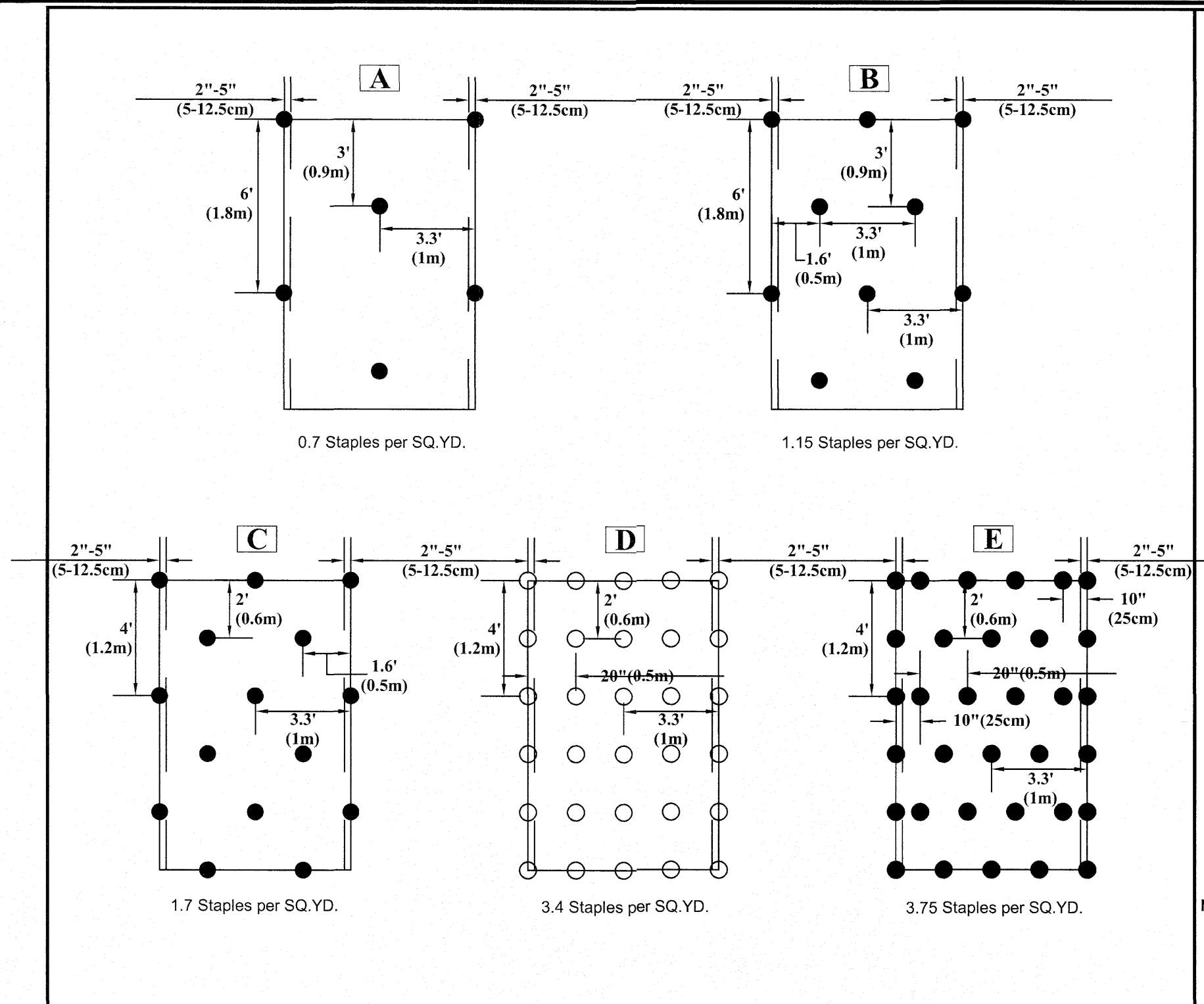
**KALAS FALLS PHASE 3**  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**  
SHEET NO.:  
CD3

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Raleigh Water Review Officer

**North Carolina**  
\*\*\* 3 Days Before Digging \*\*\*  
North Carolina 811  
811 or 1-800-632-0949  
Remote Ticket Entry  
<http://nc811.org/remoteticketentry.htm>





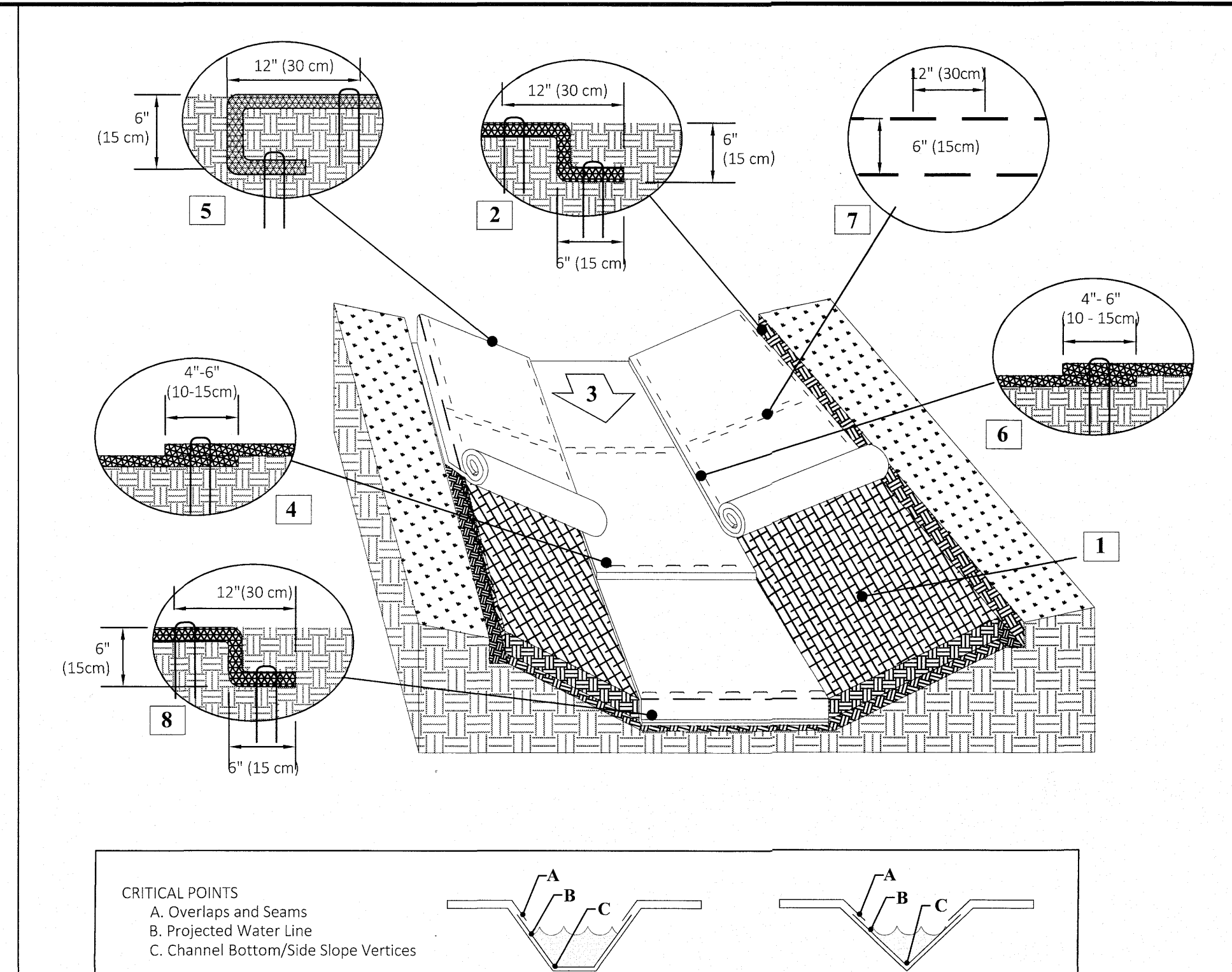
**NOTES:**

- \* Use ECMD5<sup>®</sup> for more accurate staple pattern selection.

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 PH: 800-772-2040  
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**Instructions**

- Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed. Ground surface must be free of debris, rocks, clay clods and raked smooth sufficient to allow intimate contact of the RECP with the soil over the entirety of the installation.
- Begin at the top of the channel by anchoring the RECPs in a 6" (15 cm) deep X 6" (15 cm) wide trench with approximately 12" (30 cm) of RECPs extended beyond the up-slope portion of the trench. Use ShoreMax mat at the channel/culvert outlet as supplemental scour protection as needed. Anchor the RECPs with a row of staples/stakes/pins approximately 12" (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12" (30 cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes/pins spaced approximately 12" (30 cm) apart across the width of the RECPs.
- Roll center RECPs in direction of water flow in bottom of channel. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes/pins in appropriate locations as shown in the staple pattern guide.
- Place consecutive RECPs end-over-end (single style) with a 4"-6" (10-15 cm) overlap. Use a double row of staples staggered 4" apart and 4" on center to secure RECPs.
- Full length edge of RECPs at top of side slopes must be anchored with a row of staples/stakes/pins spaced at S<sub>1</sub> apart in a 6" (15 cm) deep X 6" (15 cm) wide trench. Backfill and compact the trench after stapling.
- Adjacent RECPs must be overlapped approximately 4"-6" (10-15 cm) and secured with staples/stakes/pins at S<sub>1</sub>.
- In high flow channel applications a staple check slot is recommended at 30 to 40 foot (9-12m) intervals. Use a double row of staples staggered 6" (15 cm) apart and 12" (30 cm) on center over entire width of the channel.
- The terminal end of the RECPs must be anchored with a row of staples/stakes/pins spaced at S<sub>1</sub> apart in a 6" (15 cm) deep X 6" (15 cm) wide trench. Backfill and compact the trench after stapling.
- Fasteners should provide a minimum of twenty pounds of pullout resistance. Six-inch (10 cm) X one-inch (2.5 cm) eleven gauge staples are typically adequate. In loose soils, longer staples may be necessary, twist pins can provide the greatest pullout resistance. In hard or rocky soils, straight pins may be used where staples or twist pins are refused, provided the minimum pullout requirements are met. Bio-degradable fasteners shall not be used with VMMax (TRM) or TMMax (HPTRM) materials.

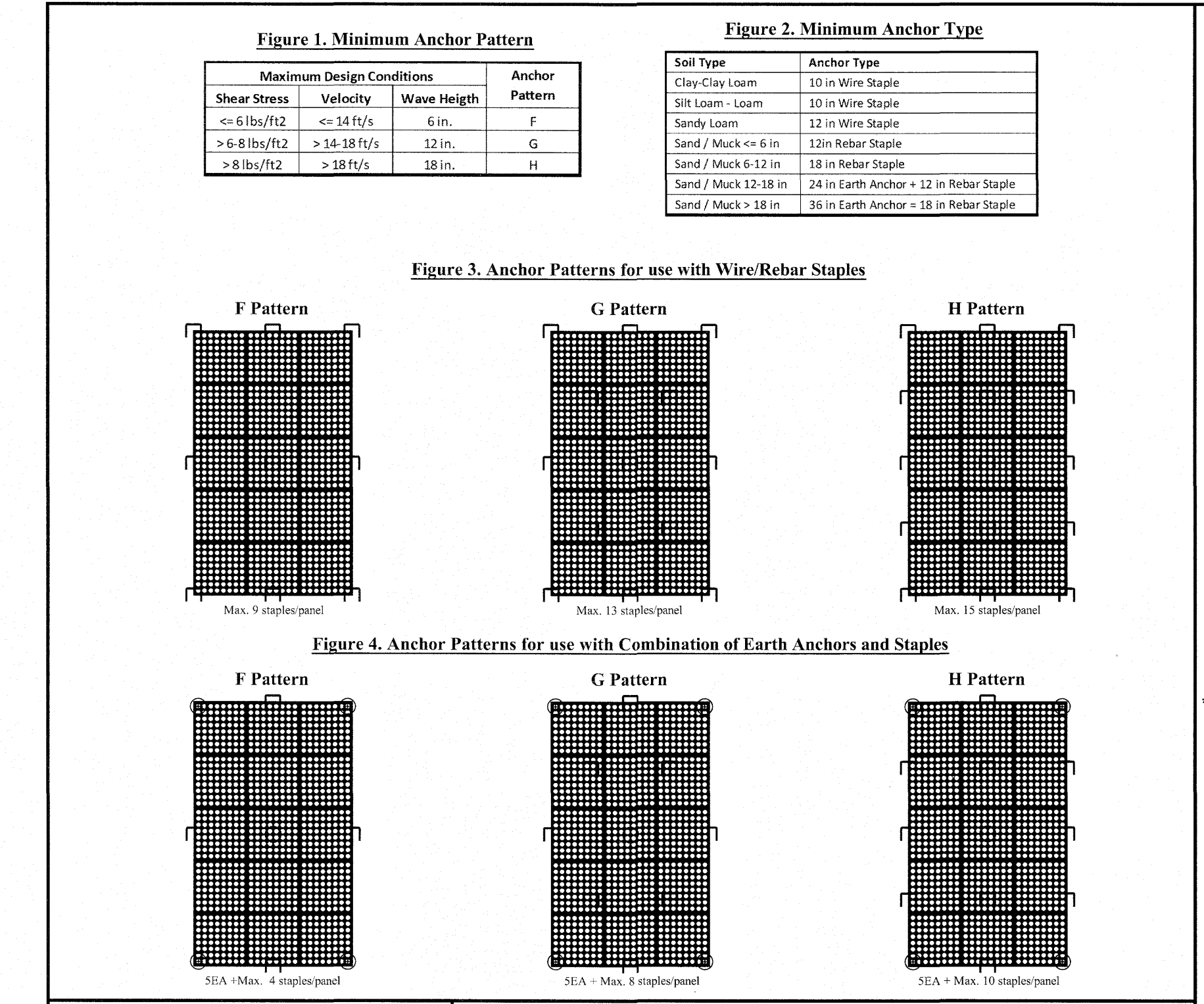
**Staple Pattern Guide**

Plan View

Unroll Direction

Underneath Roll Roll Overlap Upper Roll

Dimension	Staple Pattern
W <sub>1</sub>	20" (50 cm)
L <sub>1</sub>	20" (50 cm)
S <sub>1</sub>	18" (45 cm)
Nominal Frequency	3.8 / SY



**ShoreMax ANCHORING GUIDE**

- When installing ShoreMax mat, the anchor pattern (figure 3 or 4) should be selected based on the expected maximum design conditions (shear stress, velocity, or wave impact) (figure 1).
- Anchor selection should be based on the soil type and pull-out strength required (figure 2). In soft, highly erodible soils percussion earth anchors may be necessary. Earth anchors can be installed in conjunction with rebar staples (figure 4).
- When using percussion earth anchors, position anchors in each corner and the center of the panel. Place staples in the appropriate pattern through remainder of mat. Staples can be shared between two adjacent panels.

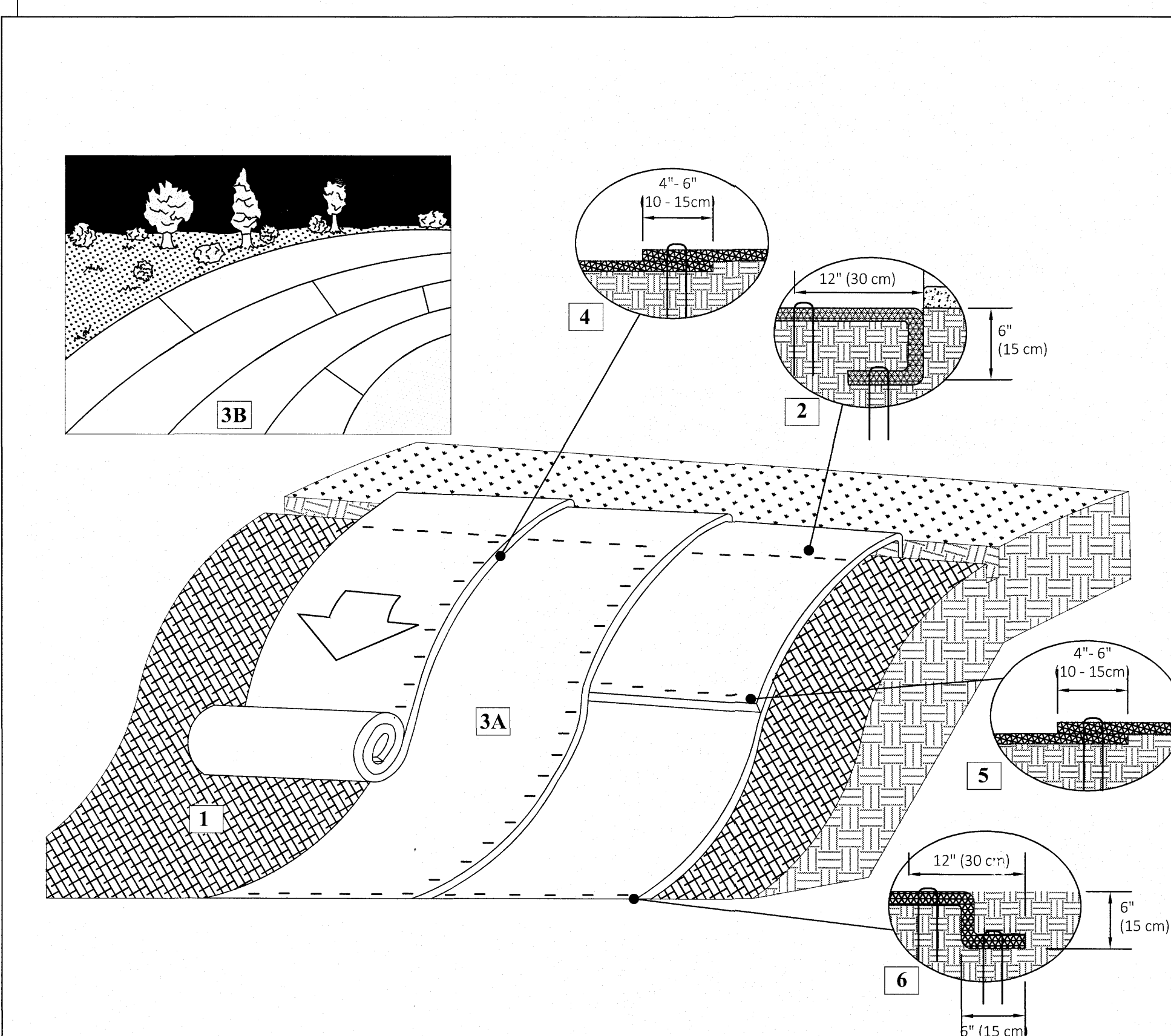
**Note:** Number of staples used per panel can be reduced by 30-40% when sharing staples between panels.

□ - Wire/Rebar Staple  
 ⊙ - Percussion Earth Anchor

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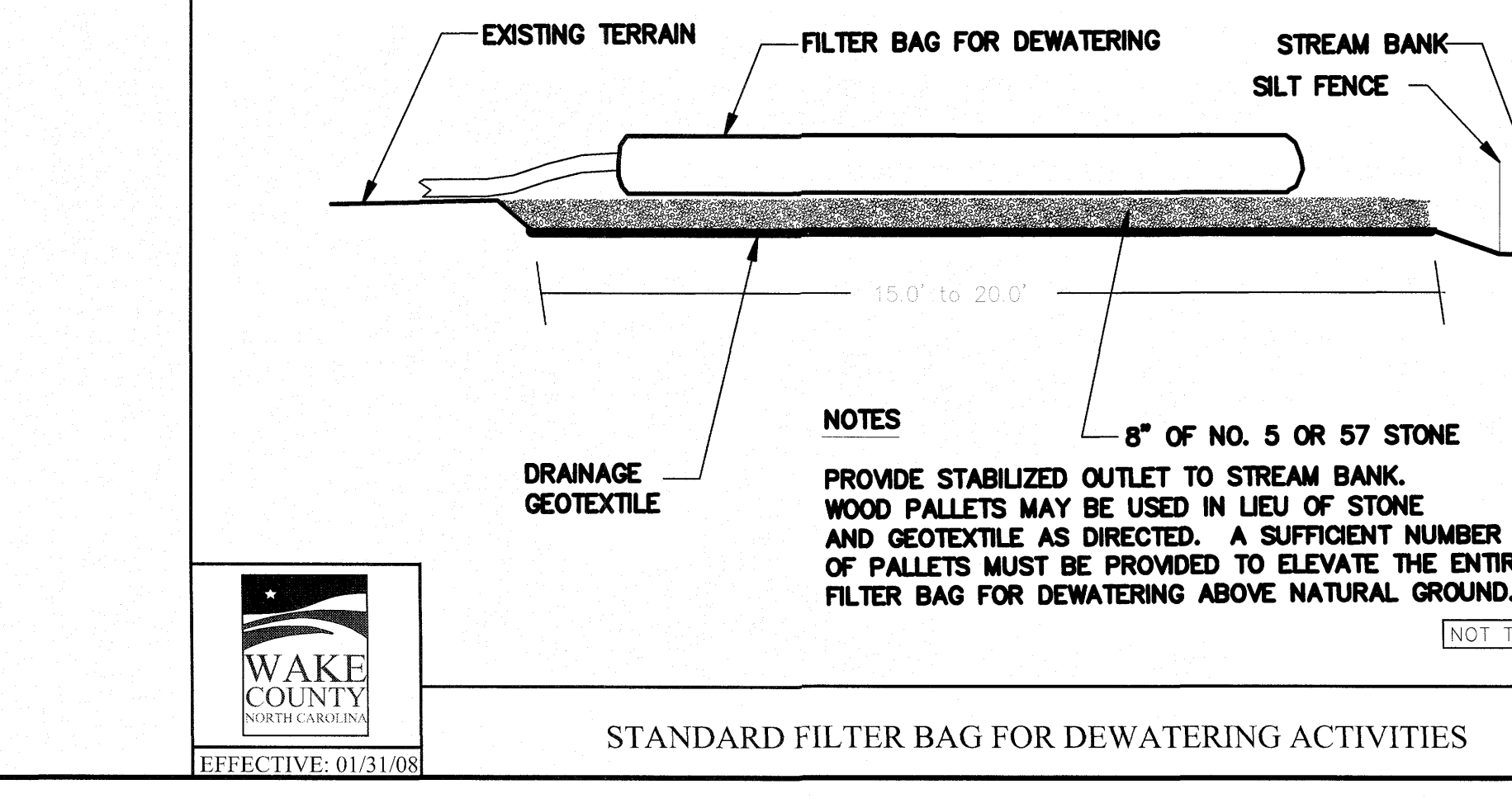
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**KALAS FALLS PHASE 3**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE: KALAS FALLS CIVIL DETAILS  
 SHEET NO.: CD4

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

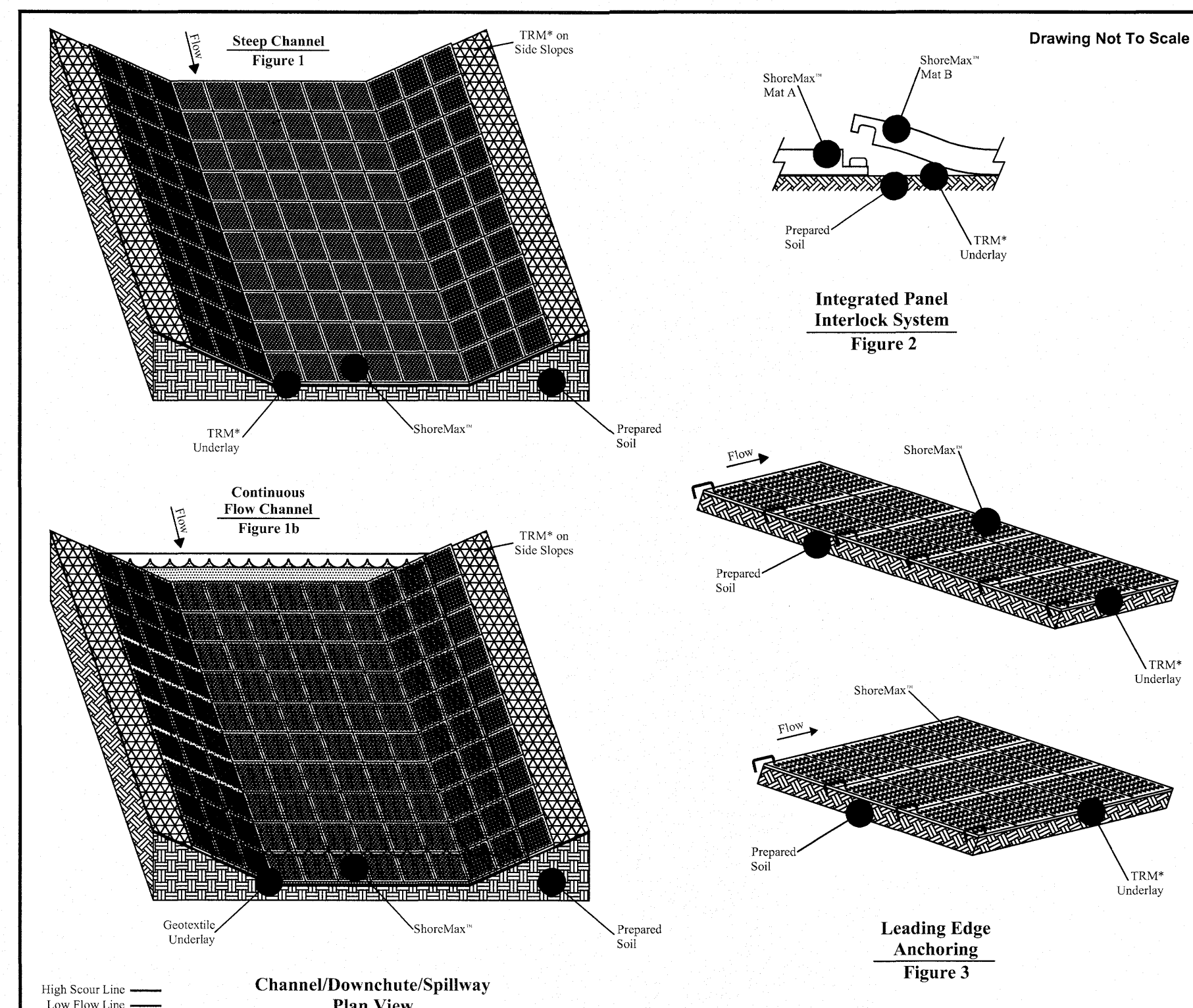
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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer

North Carolina 811  
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 North Carolina 811  
 811 or 1-800-632-4949  
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### ShoreMax

#### STEEP CHANNEL/CHUTE/SPILLWAY DETAIL

\* ShoreMax mats can be installed over a variety of underlayments including: soil, turf reinforcement mats (TRMs), geotextiles, and in some cases erosion control blankets (ECBs).

- Prepare soil before installing erosion control products, including any necessary application of lime, fertilizer, and seed (when installing TRM or ECB underlayment).
- Install turf reinforcement mat (TRM) over prepared soils according to manufacturer's recommendations.
- Place ShoreMax mat in the bottom of the channel over the installed TRM (figure 1). The ShoreMax mat should be installed up to the appropriate elevation on the side slope as determined by the engineer. When using multiple panels, connect the panels using the Integrated Panel Interlock System (figure 2). ShoreMax mat can be laid in either direction.
- For channels carrying continuous water flows, an appropriate geotextile should be placed under the ShoreMax mat for submerged applications (figure 1b).
- Place staples/anchors in the appropriate pattern. Perimeter staples can be shared between two adjacent panels. In soft or highly erodible soils, percussion earth anchors may be required. View ShoreMax Anchoring Guide, for additional details.
- At beginning of channel and areas where significant concentrated flows are directed onto the ShoreMax mat, place 1 staple/pin per linear foot along the leading edge of the ShoreMax system, resulting in 1 staple/pin on each corner and gridline (figure 3).

**NORTH AMERICAN GREEN**  
5401 St. Wendel - Cynthia Rd.  
Poseyville, IN 47633  
PH: 800-722-2040  
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Drawn on: 5-4-17

### PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

Item to Document	Documentation Requirements
(a) Each E&S measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&S plan.	Initial and date each E&S measure on a copy of the approved E&S plan or complete, date and sign an inspection report that lists each E&S measure shown on the approved E&S plan. This documentation is required upon the initial installation of the E&S measures or if the E&S measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&S plan.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&S measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&S measures.	Initial and date a copy of the approved E&S plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

**2. Additional Documentation to be Kept on Site**  
In addition to the E&S plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:  
(a) This General Permit as well as the Certificate of Coverage, after it is received.  
(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

**3. Documentation to be Retained for Three Years**  
All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

### PART III SELF-INSPECTION, RECORDKEEPING AND REPORTING

#### SECTION C: REPORTING

1. Occurrences that Must be Reported  
Permittees shall report the following occurrences:  
(a) Visible sediment deposition in a stream or wetland.  
(b) Oil spills if:  
• They are 25 gallons or more,  
• They are less than 25 gallons but cannot be cleaned up within 24 hours,  
• They cause sheen on surface waters (regardless of volume), or  
• They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.  
(d) Anticipated bypasses and unanticipated bypasses.  
(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements  
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	<b>Within 24 hours</b> , an oral or electronic notification. <b>Within 7 calendar days</b> , a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired waters conditions.
(b) Oil spills and releases of hazardous substances per Item 1(b)(1)-(c) above	<b>Within 24 hours</b> , an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release. <b>Within 7 calendar days</b> , a report that includes an evaluation of the quality and effect of the bypass. <b>Within 24 hours</b> , an oral or electronic notification.
(c) Anticipated bypasses (40 CFR 122.41(m)(3))	<b>Within 7 calendar days</b> , a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time frame in which noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. [40 CFR 122.41(i)(6). Division staff may waive the requirement for a written report on a case-by-case basis.
(d) Unanticipated bypasses (40 CFR 122.41(m)(3))	<b>Within 24 hours</b> , an oral or electronic notification.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment (40 CFR 122.41(i)(7))	<b>Within 24 hours</b> , an oral or electronic notification.

### PART II, SECTION G, ITEM (4) DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:  
(a) The E&S plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&S plan authority has approved these items.  
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit.  
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, wet tanks, and filtration systems.  
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above.  
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and  
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

### NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

EFFECTIVE: 04/01/19

#### GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed. - 7 days for slopes greater than 50' in length and with slopes steeper than 4:1 - 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones
(d) Slopes 3:1 to 4:1	14	- 10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	- 7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones - 10 days for Falls Lake Watershed unless there is zero slope

**Note:** After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

#### GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers	• Permanent grass seed covered with straw or other mulches and tackifiers
• Hydroseeding	• Geotextile fabrics such as permanent soil reinforcement matting
• Rolled erosion control products with or without temporary grass seed	• Hydroseeding
• Appropriately applied straw or other mulch	• Shrubs or other permanent plantings covered with mulch
• Plastic sheeting	• Uniform and evenly distributed ground cover sufficient to restrain erosion
	• Structural methods such as concrete, asphalt or retaining walls
	• Rolled erosion control products with grass seed

#### POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

- Select flocculants that are appropriate for the soils being exposed during construction, selecting from the NC DWR List of Approved PAMS/Flocculants.
- Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
- Apply flocculants at the concentrations specified in the NC DWR List of Approved PAMS/Flocculants and in accordance with the manufacturer's instructions.
- Provide ponding area for containment of treated Stormwater before discharging offsite.
- Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

#### EQUIPMENT AND VEHICLE MAINTENANCE

- Maintain vehicles and equipment to prevent discharge of fluids.
- Provide drip pans under any stored equipment.
- Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
- Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
- Remove leaking vehicles and construction equipment from service until the problem has been corrected.
- At beginning of channel and areas where significant concentrated flows are directed onto the ShoreMax mat, place 1 staple/pin per linear foot along the leading edge of the ShoreMax system, resulting in 1 staple/pin on each corner and gridline (figure 3).

#### LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

- Never bury or burn waste. Place litter and debris in approved waste containers.
- Provide a sufficient number and size of waste containers (e.g. dumpster, trash receptacle) on site to contain construction and domestic wastes.
- Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
- Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
- Anchor all lightweight items in waste containers during times of high winds.
- Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
- Dispose waste off-site at an approved disposal facility.
- On business days, clean up and dispose of waste in designated waste containers.

#### PAINT AND OTHER LIQUID WASTE

- Do not dump paint and other liquid waste into storm drains, streams or wetlands.
- Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
- Contain liquid wastes in a controlled area.
- Containment must be labeled, sized and placed appropriately for the needs of site.
- Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

#### PORTABLE TOILETS

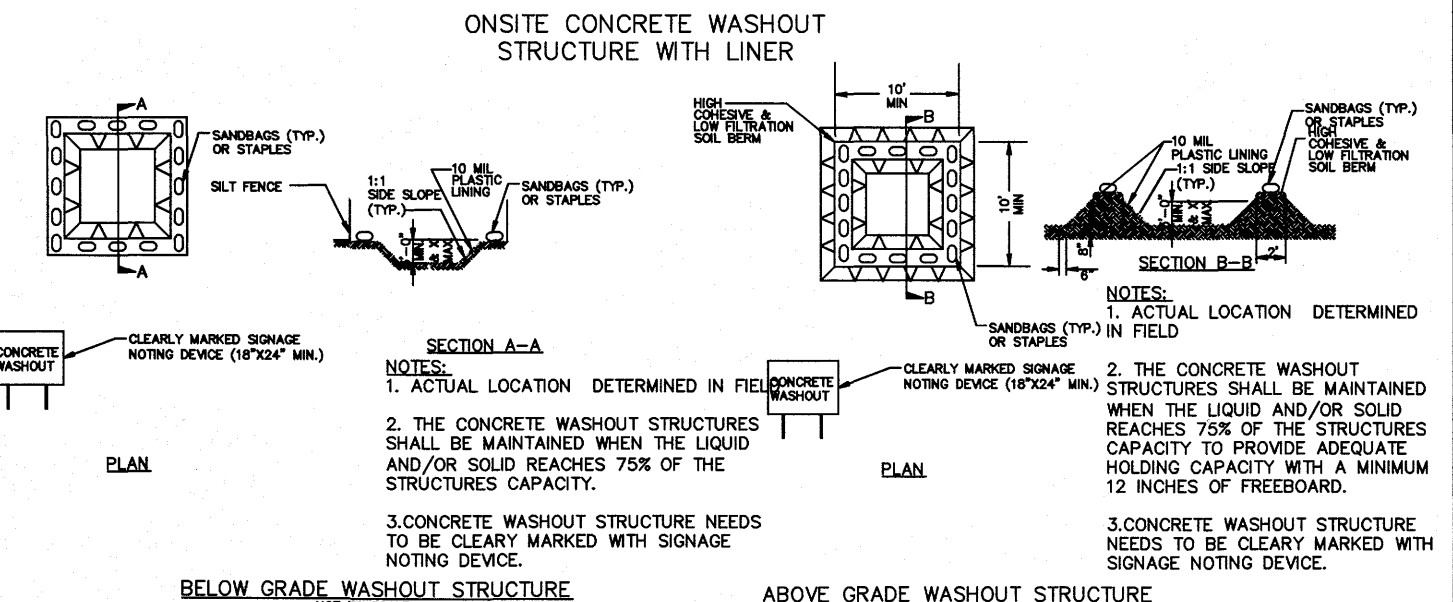
- Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
- Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
- Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

#### EARTHEN STOCKPILE MANAGEMENT

- Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
- Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
- Provide stable stone apex point when feasible.
- Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

#### HAZARDOUS AND TOXIC WASTE

- Create designated hazardous waste collection areas on-site.
- Place hazardous waste containers under cover or in secondary containment.
- Do not store hazardous chemicals, drums or bagged materials directly on the ground.

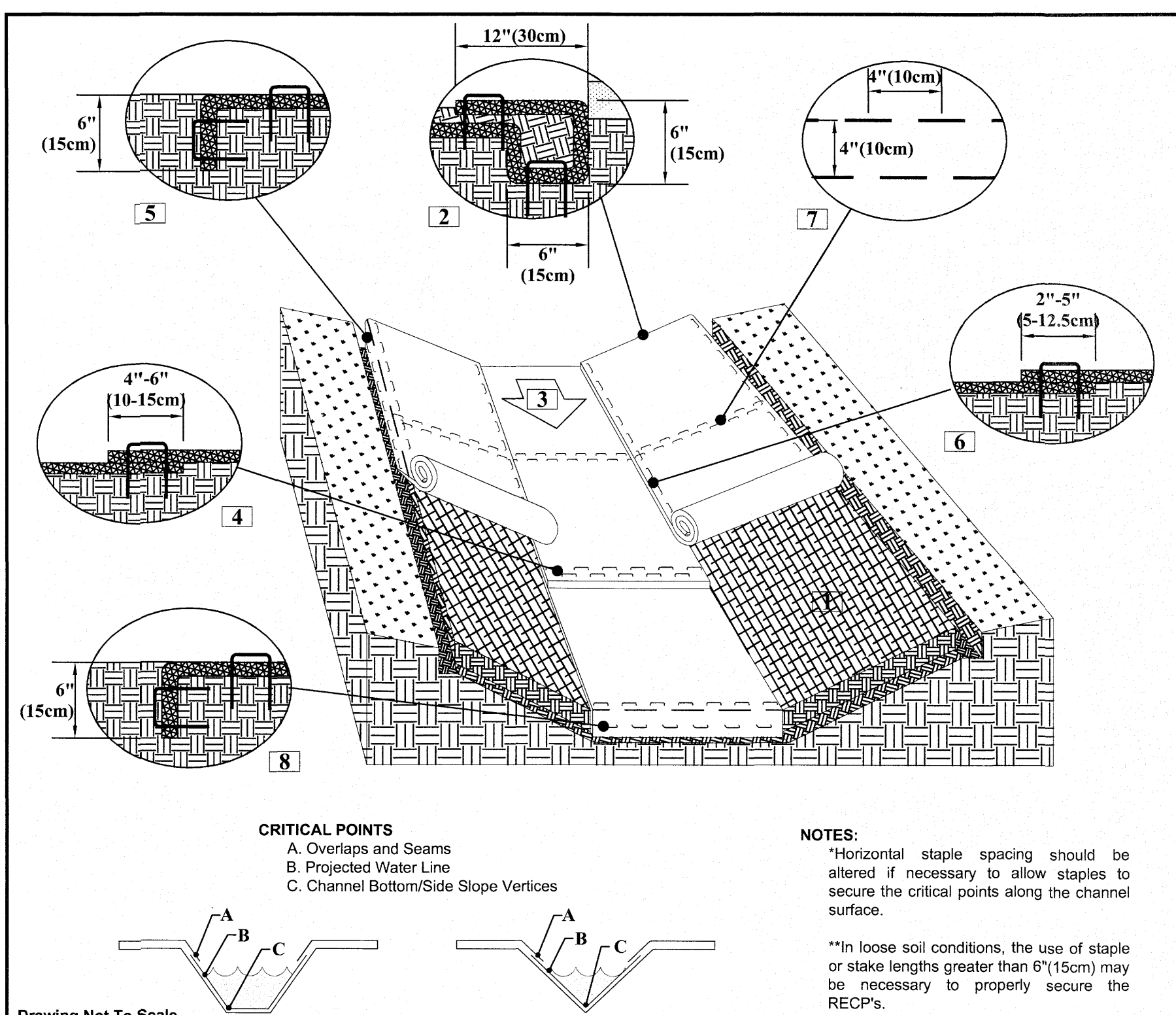


#### CONCRETE WASHOUTS

- Do not discharge concrete or cement slurry from the site.
- Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
- Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
- Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standards details are not available, use one of the two types of temporary concrete washouts provided on this detail.
- Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
- Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
- Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
- Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
- Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
- At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

#### HERBICIDES, PESTICIDES AND RODENTICIDES

- Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
- Store herbicides, pesticides and rodenticides in their original containers with the label which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
- Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
- Do not stockpile these materials onsite.



**NORTH AMERICAN GREEN**  
5401 St. Wendel - Cynthia Rd.  
Poseyville, IN 47633  
PH: 800-722-2040  
www.nagreen.com

**Disclaimer:**  
The information presented herein is general design information only. For specific applications, consult an independent professional for further design guidance.

Drawn on: 5-4-17

#### CHANNEL INSTALLATION DETAIL

- Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
- Begin at the top of the channel by anchoring the RECPs in a 6\"/>

**CRITICAL POINTS**  
A. Overlaps and Seams  
B. Projected Water Line  
C. Channel Bottom/Side Slope Vertices

**NOTES:**  
\*Horizontal staple spacing should be altered if necessary to allow staples to secure the critical points along the channel surface.  
\*\*In loose soil conditions, the use of staple or stake lengths greater than 6\"/>

**STIPULATION FOR REUSE**  
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

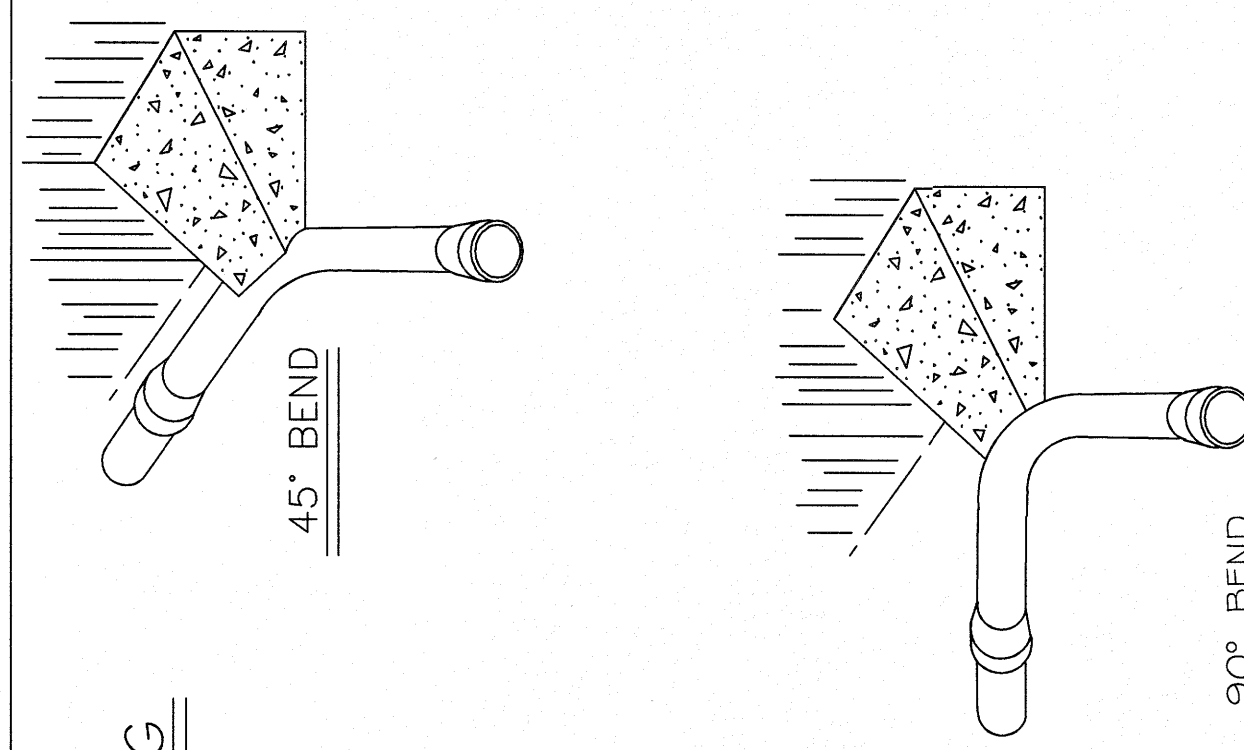
KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
KALAS FALLS  
CIVIL DETAILS  
SHEET NO.:  
CD5

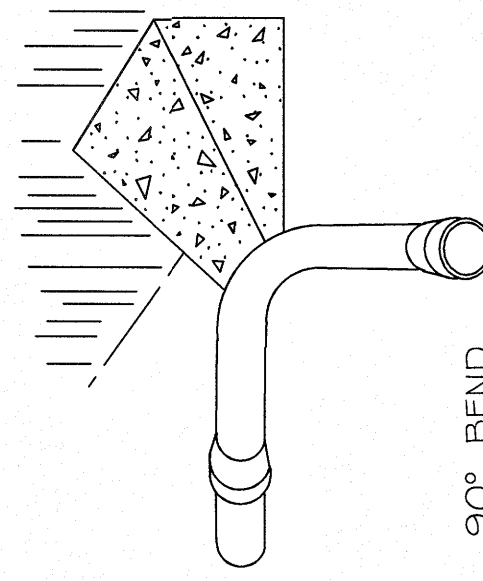




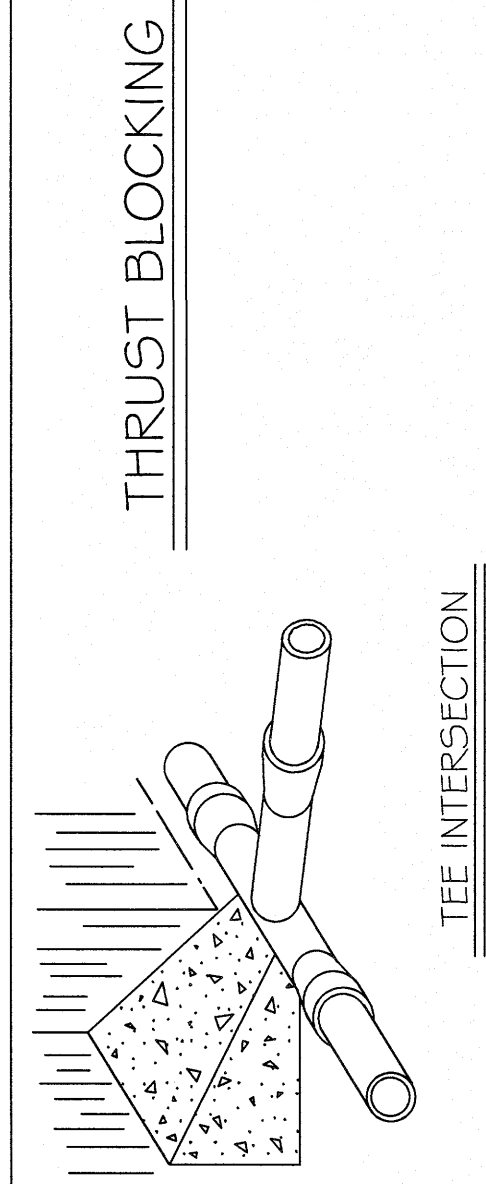




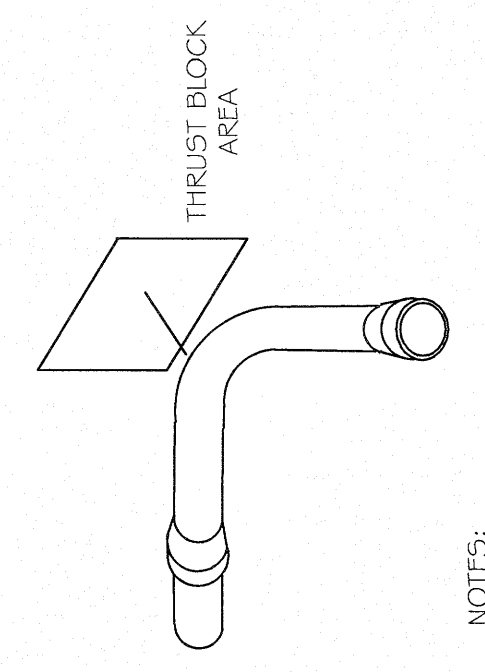
45° BEND



90° BEND



TEE INTERSECTION



THRUST BLOCK AREA

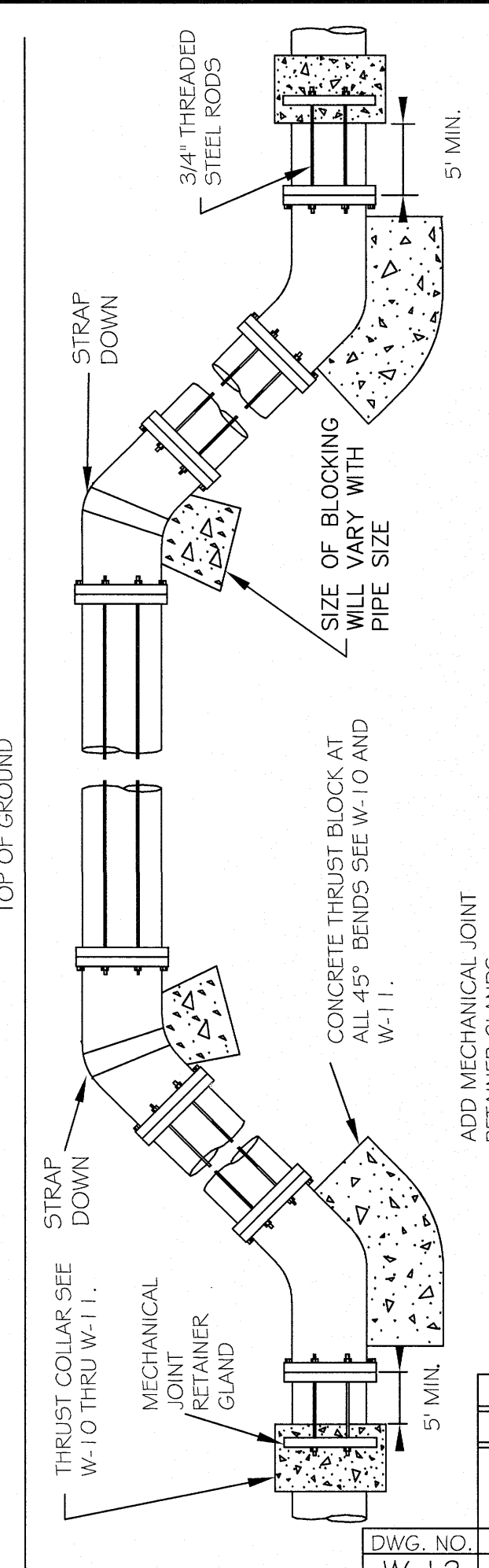
- NOTES:
1. CONCRETE SHALL BE 3000 PSI.
  2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
  3. REINCHES SHALL CONFORM TO STANDARD DETAIL.
  4. SEE STANDARD THRUST BLOCK TABLES W-10 THRU W-11 FOR AREA OF CONCRETE REQUIRED.
  5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH					
DEPARTMENT OF PUBLIC UTILITIES					
STANDARD THRUST BLOCKING VIEWS					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-9	D.W.C.	3-1-87	RRH	3-31-00	
		9-7-99	D.H.L.	6-18-08	

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS  
BASED ON TEST PRESSURE OF 200 P.S.I.

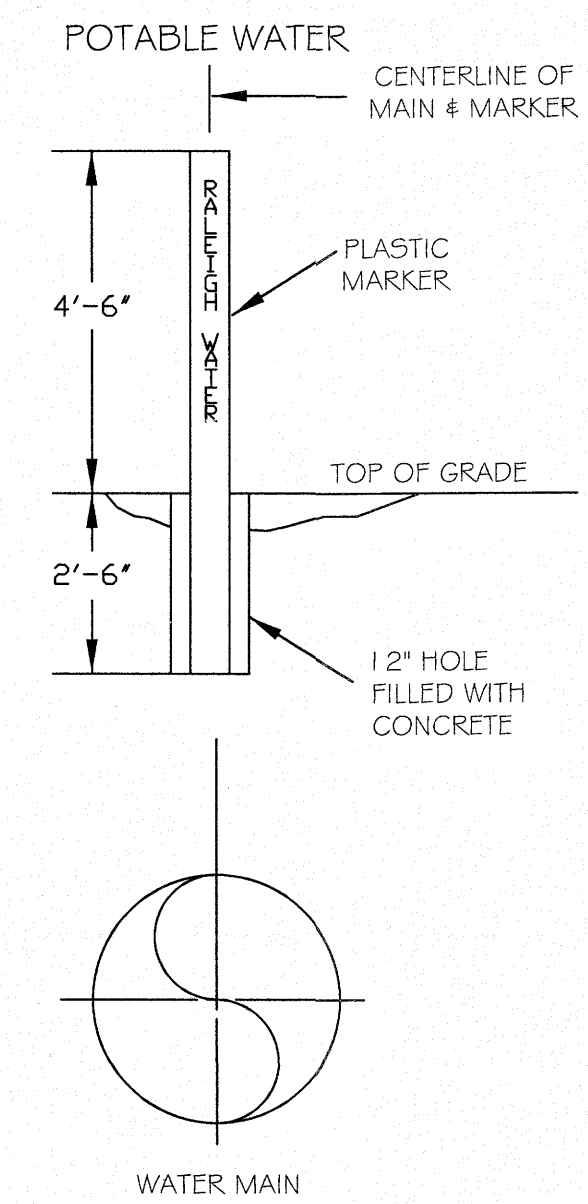
SIZE AND DEGREE OF BEND	ALL AREAS GIVEN IN SQUARE FEET											
	STATIC THRUST IN POUNDS	MORE OR LESS DRY CLAY 4000 LBS/FT <sup>3</sup>	SOFT CLAY 2000 LBS/FT <sup>3</sup>	1800 LB/FT <sup>3</sup> COARSE SAND	800 LB/FT <sup>3</sup> GRAVEL ALWAYS DRY	SAND, COMPACT FIRM 8000 LBS/FT <sup>3</sup> DRY CLAY-	SAND - CLEAN DRY 4000 LBS/FT <sup>3</sup>	SOIL 12000 LBS/FT <sup>3</sup> QUICK SAND - VERY POOR	ROCK - POOR 10,000 LBS/FT <sup>3</sup>			
6"												
11 1/4"	1,108	1	1	1	1	1	2	1				
22 1/2"	2,207	1	2	2	1	1	1	3	1			
45°	4,328	2	3	3	1	1	2	5	1			
90°	7,996	2	4	5	1	1	2	8	1			
PLUG	5,655	2	3	4	1	1	2	6	1			
8"												
11 1/4"	1,970	1	1	2	1	1	1	2	1			
22 1/2"	3,922	1	2	3	1	1	1	4	1			
45°	7,694	2	4	5	1	1	2	8	1			
90°	14,215	4	8	9	2	2	4	15	2			
PLUG	10,053	3	5	6	2	2	3	10	1			
12"												
11 1/4"	4,433	2	3	3	1	1	2	5	1			
22 1/2"	8,826	3	5	6	2	2	3	9	1			
45°	17,312	5	9	11	3	3	5	18	2			
90°	31,983	8	16	19	4	4	8	32	4			
PLUG	22,619	6	12	14	3	3	6	23	3			
16"												
11 1/4"	7,881	2	4	5	1	1	2	8	1			
22 1/2"	15,691	4	8	10	2	2	4	16	2			
45°	30,779	8	16	19	4	4	8	31	4			
90°	56,861	15	29	35	8	8	15	57	6			
PLUG	40,213	10	21	25	5	5	10	41	5			

CITY OF RALEIGH					
DEPARTMENT OF PUBLIC UTILITIES					
THRUST BLOCKING DESIGN QUANTITY TABLE					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-10	D.W.C.	6-23-99			



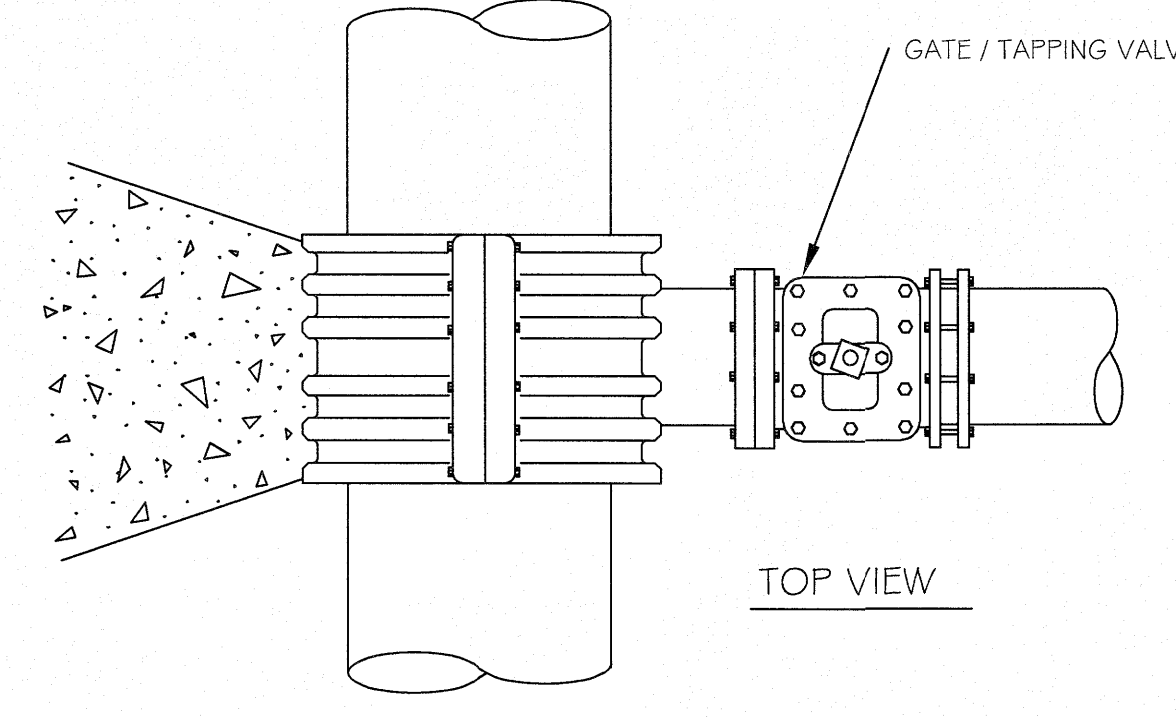
SIZE OF 45° BEND	STATIC THRUST IN POUNDS	NO. OF RODS REQUIRED
6"	4,328	2
8"	7,694	4
12"	17,312	4
16"	30,779	8
24"	69,252	8

- GENERAL NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
  2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.
  3. RESTRAINED MECHANICAL GLANDS TO BE USED AT ALL FITTINGS.
  4. MUST USE DUCTILE IRON EYE BOLTS WHERE NECESSARY.
  5. 3" MINIMUM COVER ON ALL WATER MAINS.

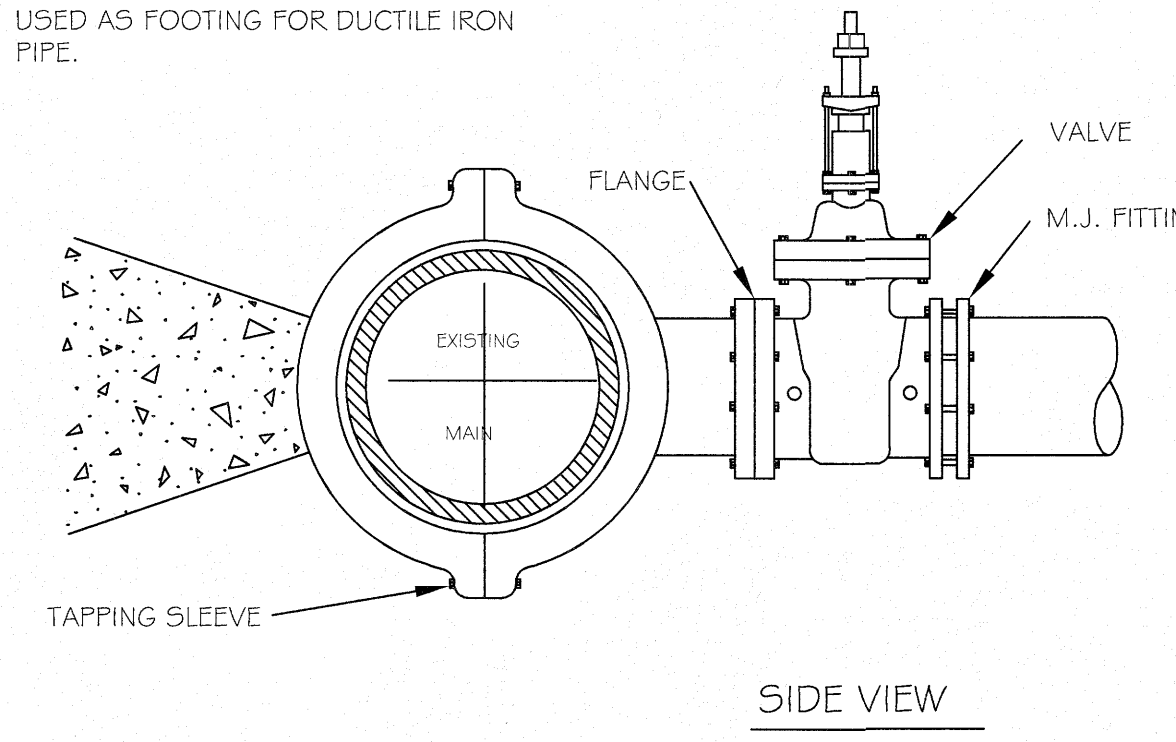


- NOTES:
1. POTABLE WATER MARKER TO BE BLUE IN COLOR.
  2. POTABLE WATER MARKER TO BE LABELED "RALEIGH WATER".
  3. TO BE SPACED ALONG CENTERLINE OF MAIN EVERY 300 FEET.
  4. MARKERS TO BE ROUND AND 4" IN DIAMETER.

CITY OF RALEIGH					
DEPARTMENT OF PUBLIC UTILITIES					
STANDARD MAIN & VALVE MARKERS FOR POTABLE & REUSE WATER IN EASEMENTS					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-13	D.W.C.	9-7-99	DHL	8-16-07	
		3-31-00	J.P.S.	11-1-10	



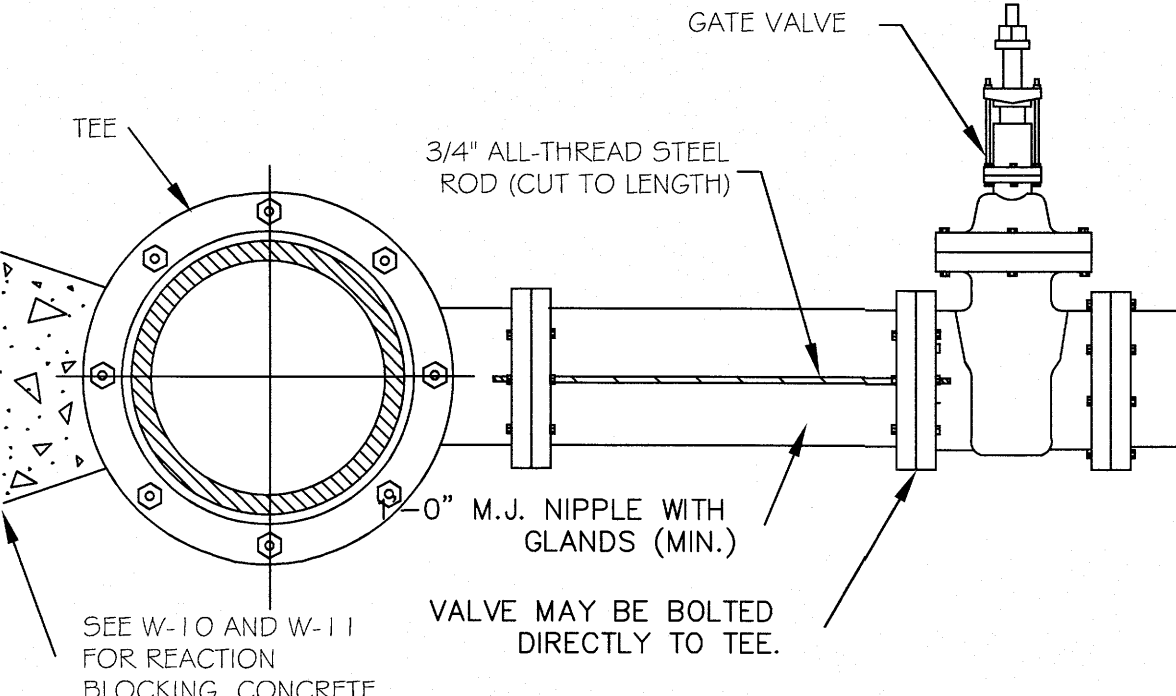
TOP VIEW



SIDE VIEW

- NOTES:
1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
  2. SEE STANDARD REACTION BLOCK TABLES W-10 AND W-11 FOR AREA OF CONCRETE REQUIRED.

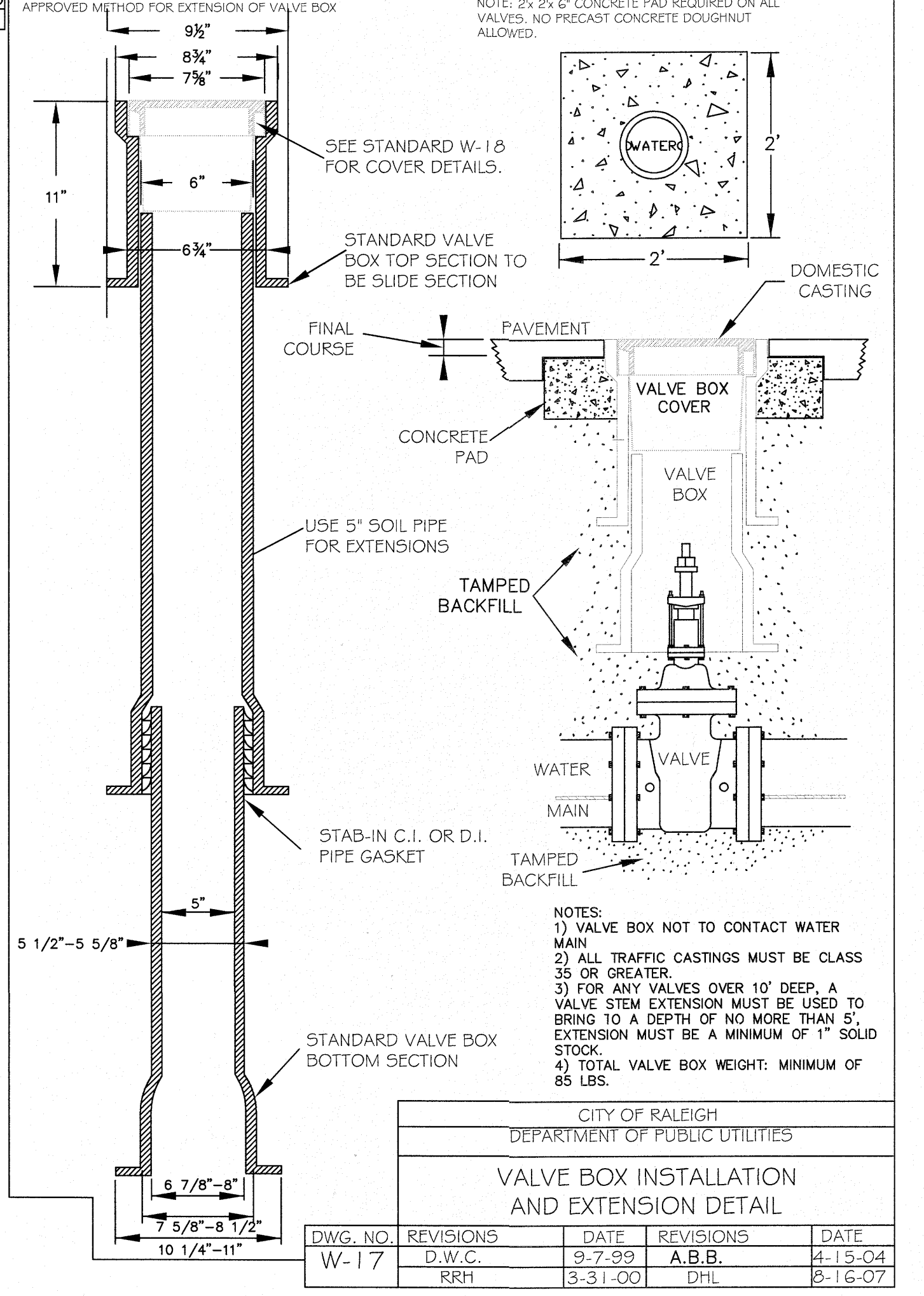
CITY OF RALEIGH					
DEPARTMENT OF PUBLIC UTILITIES					
4" - 24" STANDARD TAPPING SLEEVE AND VALVE ASSEMBLY					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-14	Y.C.A.	2-31-91	RRH	3-31-00	
	D.W.C.	9-7-99	J.P.S.	11-1-10	



NO. OF RODS	BRANCH SIZE
4"	2
6"	2
8"	4
12"	4
16"	6
20"	8
24"	8
36"	8

- NOTES:
1. STEEL RODS AND BOLTS SHALL BE 3/4" HOT DIPPED GALVANIZED.
  2. SEE STANDARD THRUST BLOCK TABLES W-10 AND W-11 FOR CONCRETE.
  3. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
  4. THIS RODDING REQUIREMENT DOES NOT APPLY TO FIRE HYDRANTS.

CITY OF RALEIGH					
DEPARTMENT OF PUBLIC UTILITIES					
VALVE RESTRAINT AT TEES AND CROSSES FOR LINES (4"-24")					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-15	RRH	3-31-00	D.H.L.	6-16-08	
	A.B.B.	4-19-04	J.P.S.	11-1-10	



- NOTES:
1. VALVE BOX NOT TO CONTACT WATER MAIN.
  2. ALL TRAFFIC CASTINGS MUST BE CLASS 35 OR GREATER.
  3. FOR ANY VALVES OVER 10' DEEP A VALVE STEM EXTENSION MUST BE USED TO BRING TO A DEPTH OF NO MORE THAN 5'. EXTENSION MUST BE A MINIMUM OF 1" SOLID STOCK.
  4. TOTAL VALVE BOX WEIGHT: MINIMUM OF 85 LBS.

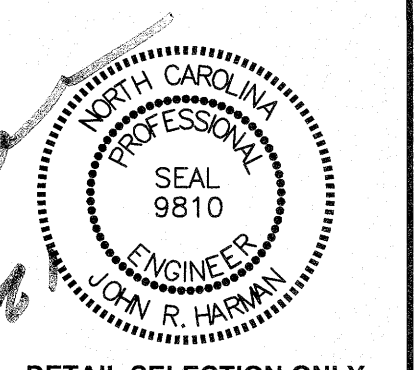
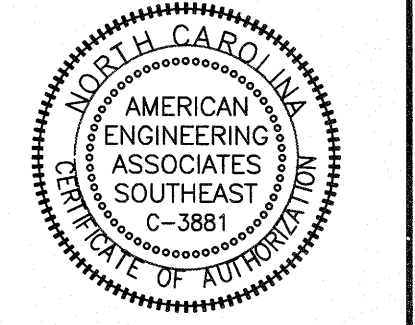
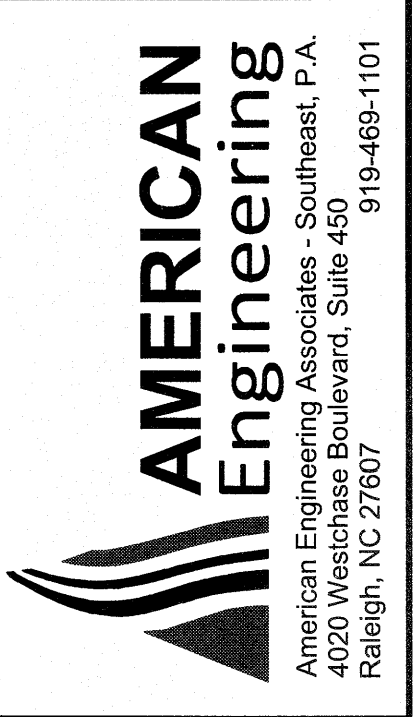
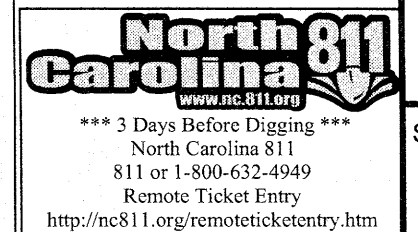
CITY OF RALEIGH					
DEPARTMENT OF PUBLIC UTILITIES					
VALVE BOX INSTALLATION AND EXTENSION DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
W-17	D.W.C.	9-7-99	A.B.B.	4-15-04	
	RRH	3-31-00	DHL	8-16-07	

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer



DETAIL SELECTION ONLY

NO.	DATE	REVISION

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

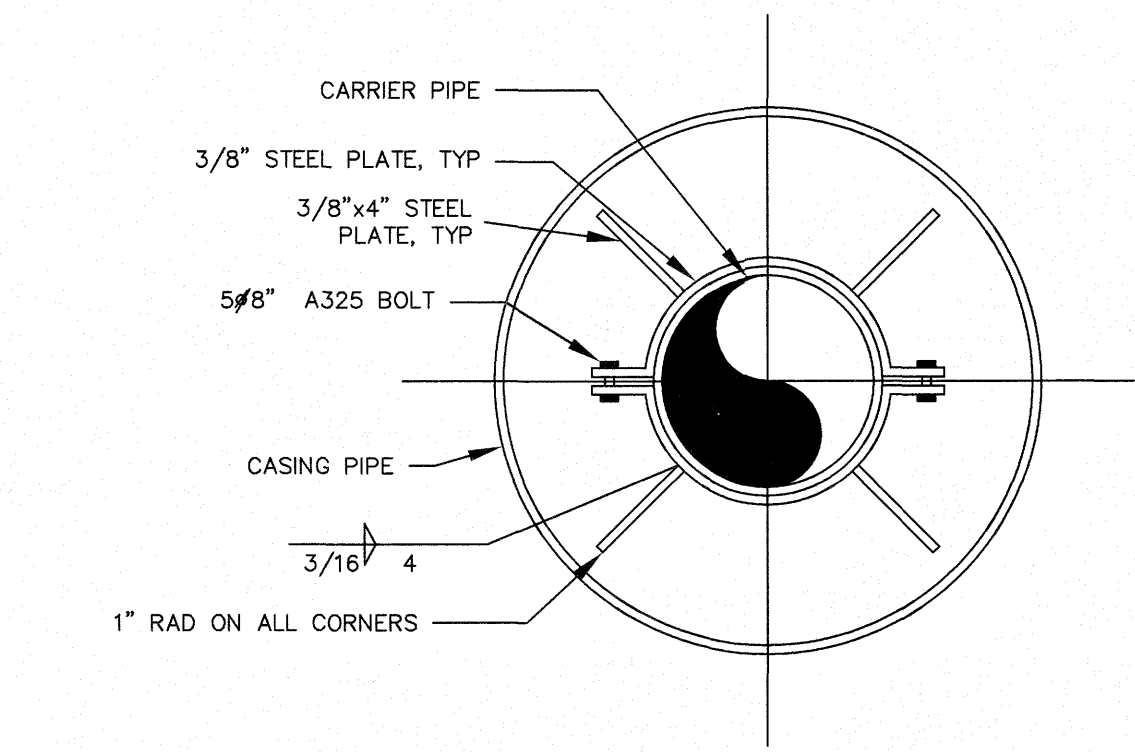
KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	

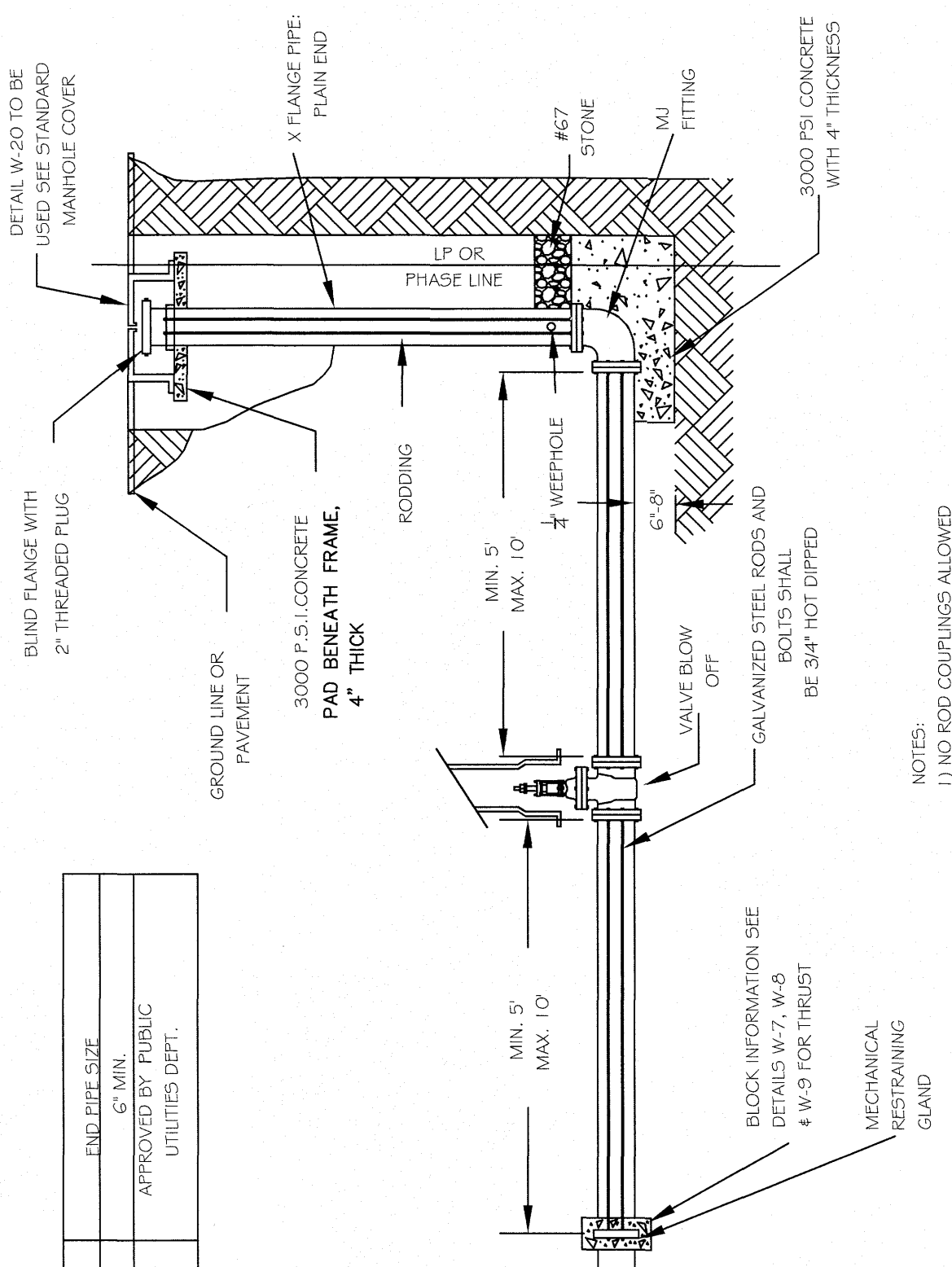
KALAS FALLS  
CIVIL DETAILS

SHEET NO.:  
CD7





NOTE:  
1) USE A MINIMUM OF TWO SPIDERS PER PIPE JOINT ONE FOURTH OF THE PIPE JOINT LENGTH IN FROM BOTH THE BELL AND SPIGOT ENDS.

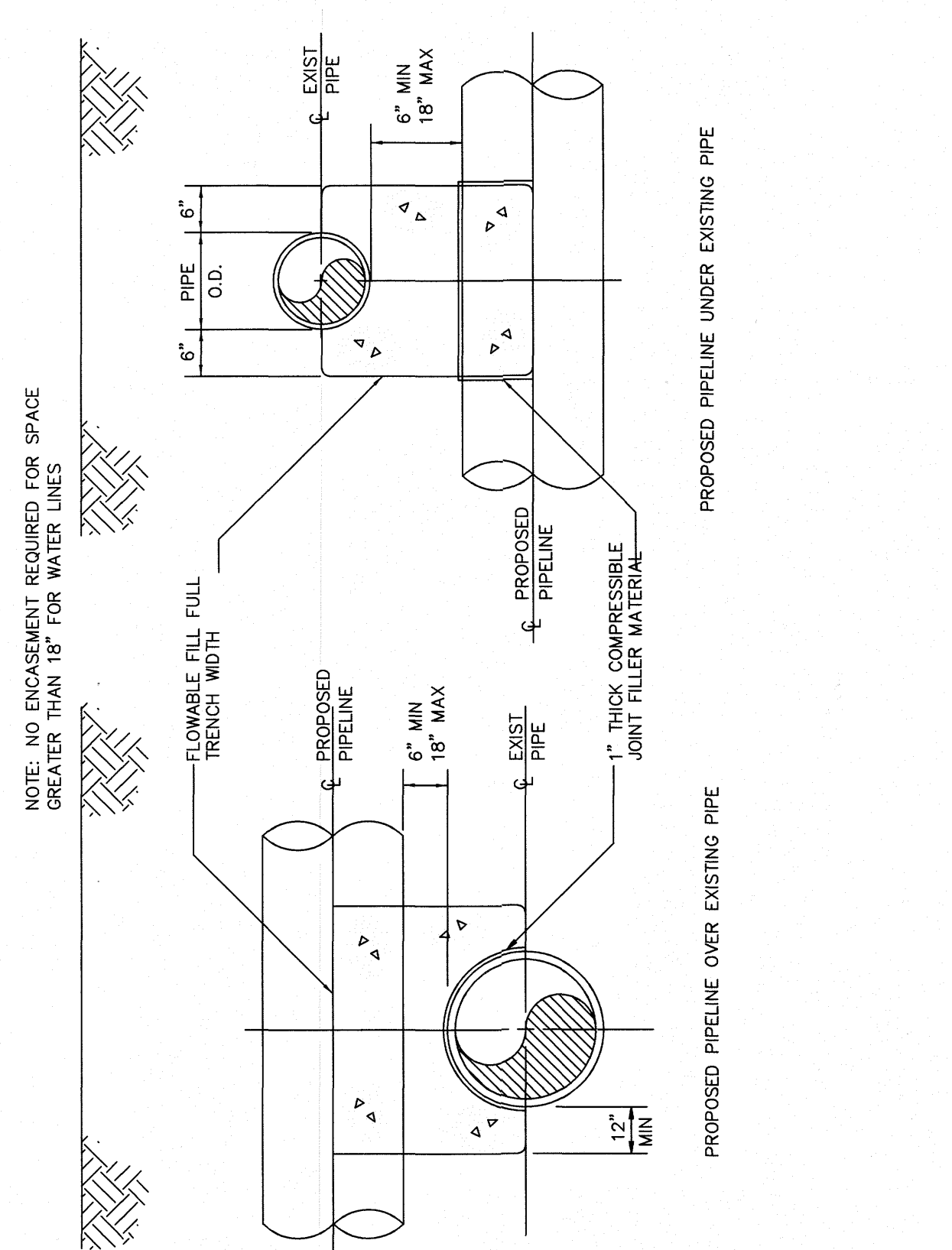


MAN SIZE	END DETAIL SIZE
16" & GREATER	6" MINIMUM APPROXIMATE PUBLIC UTILITIES DEPT.
6" - 12"	

NOTES:  
1) NO ROD COUPLINGS ALLOWED

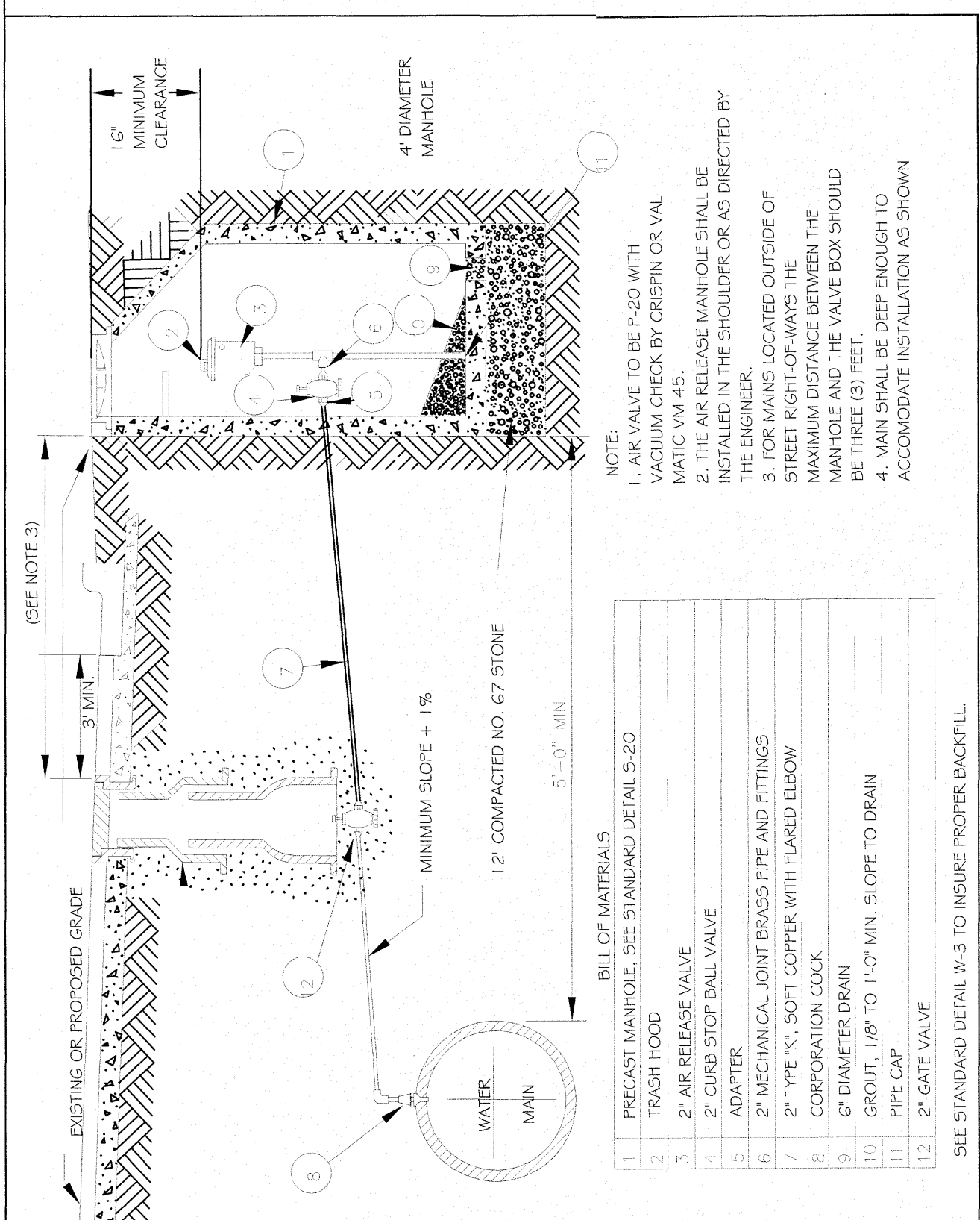
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
PIPE ALIGNMENT GUIDE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-40	RRH	3-31-00		
	A.B.B.	4-16-04		

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TEMPORARY WATER MAIN BLOW OFF ASSEMBLY				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-21	D.W.C.	12-28-99	A.B.B.	4-12-04
	RRH	3-31-00	D.H.L.	6-16-07



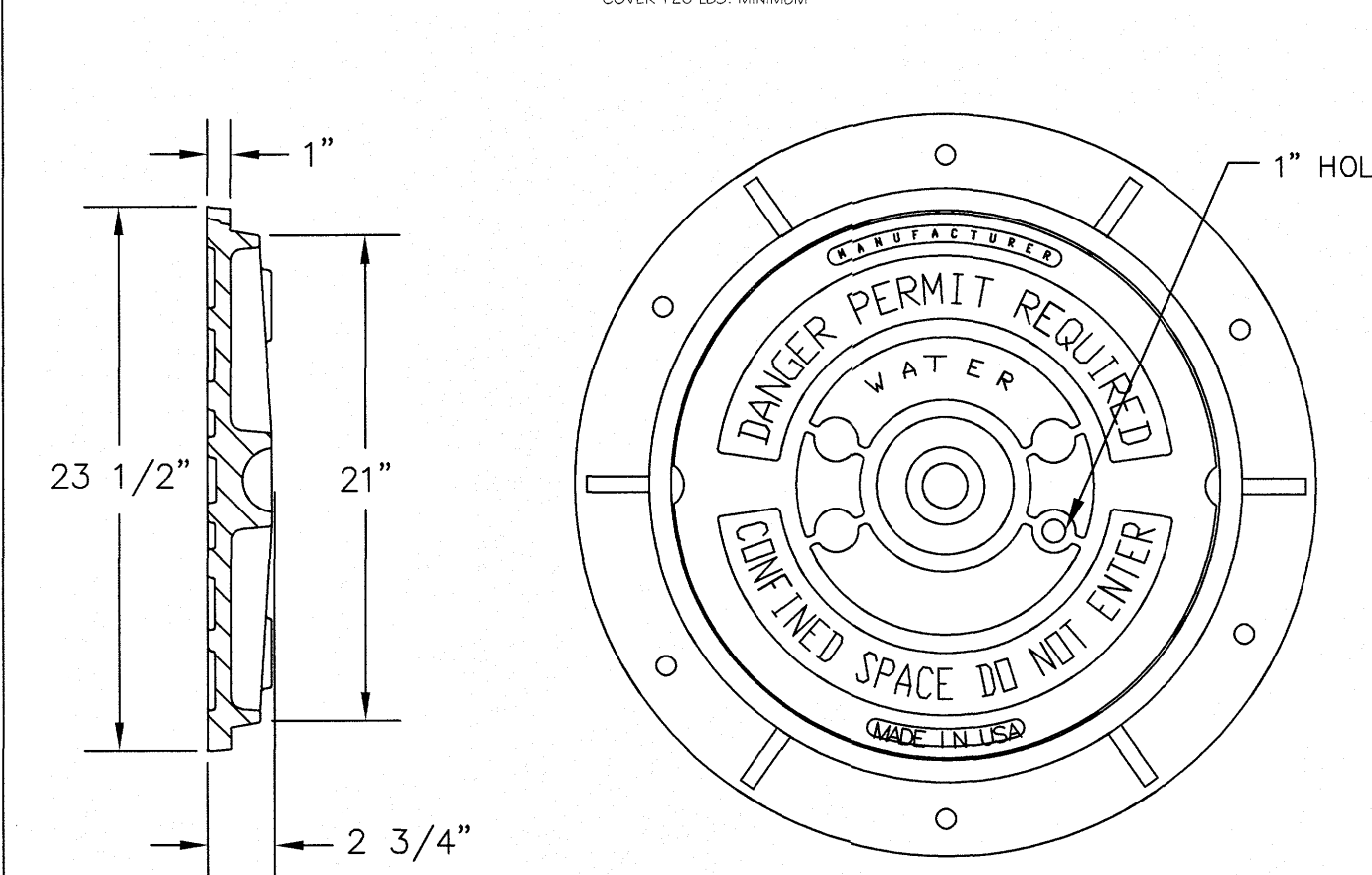
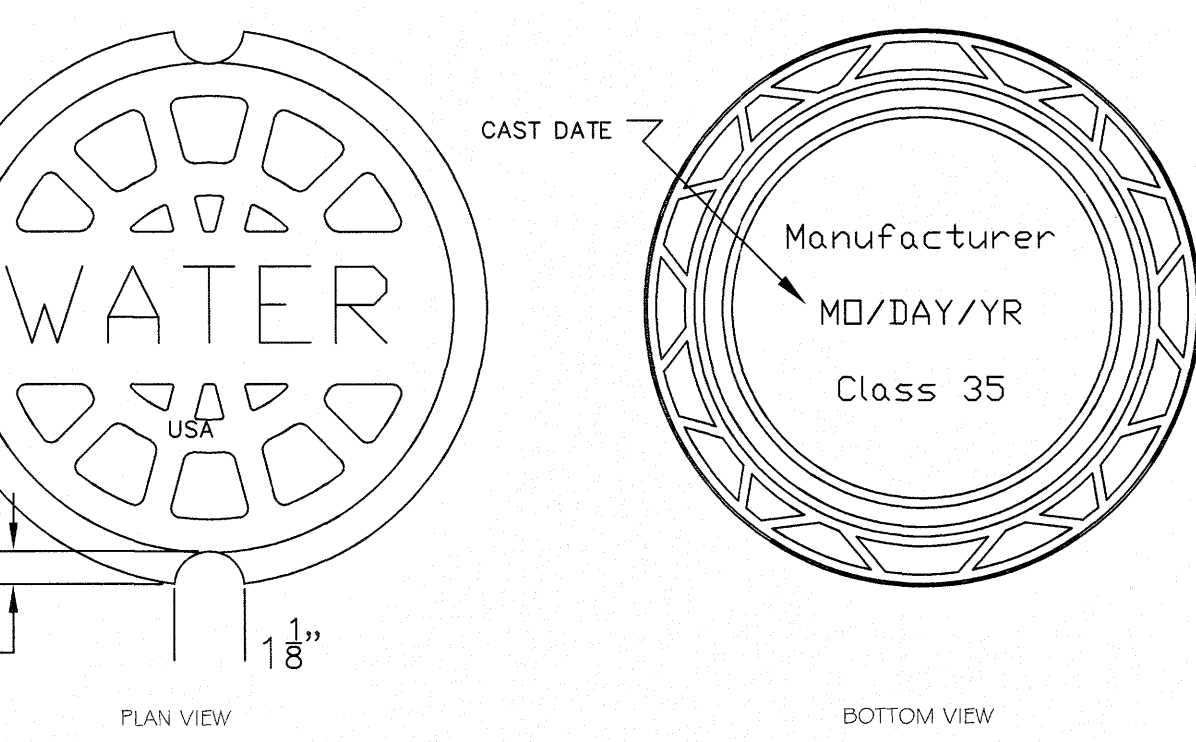
NOTE: NO ENCASMENT REQUIRED FOR SPACE GREATER THAN 18\"/>

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
CONCRETE CRADLE PROTECTION FOR WATER LINE CROSSINGS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-41	D.H.L.	2-20-08		



NOTE:  
1. AIR VALVE TO BE P-20 WITH VACUUM CHECK BY CRISPM OR VAL MATIC AIR RELEASE MANIFOLD OR VAL MATIC AIR RELEASE MANIFOLD SHALL BE INSTALLED IN THE SHOULDER OR AS DIRECTED BY THE ENGINEER.  
2. FOR MAINS LOCATED OUTSIDE OF STREET RIGHT-OF-WAY THE STREET SIDE SHALL BE THE MANHOLE AND THE VALVE BOX SHOULD BE THREE (3) FEET.  
3. MAN SHALL BE DEEP ENOUGH TO ACCOMMODATE INSTALLATION AS SHOWN.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD WATER AIR RELEASE VALVE				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-19	ABB	10-4-04		
	J.P.S.	11-1-10	RRH	2-27-91
				6-7-00

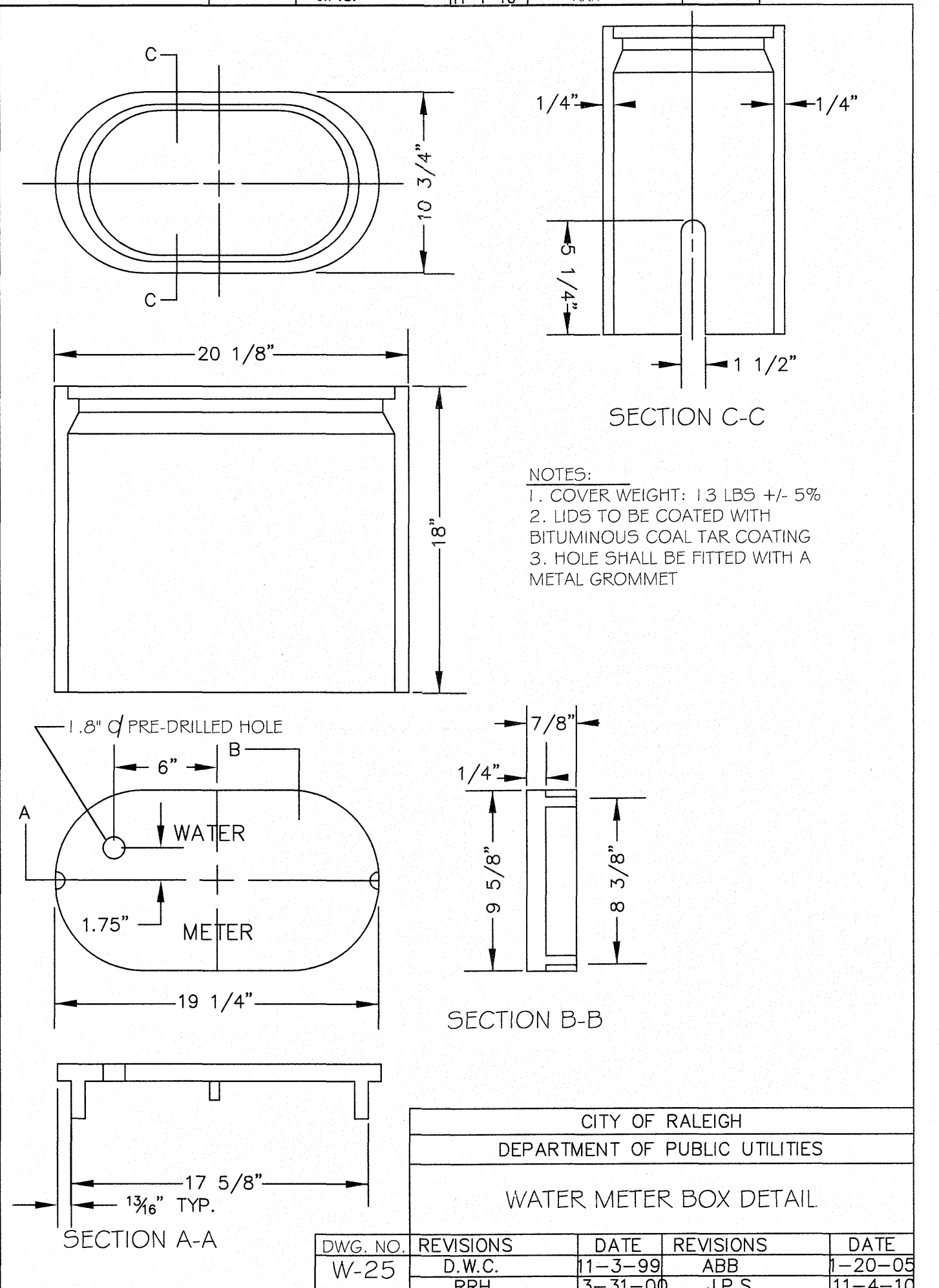
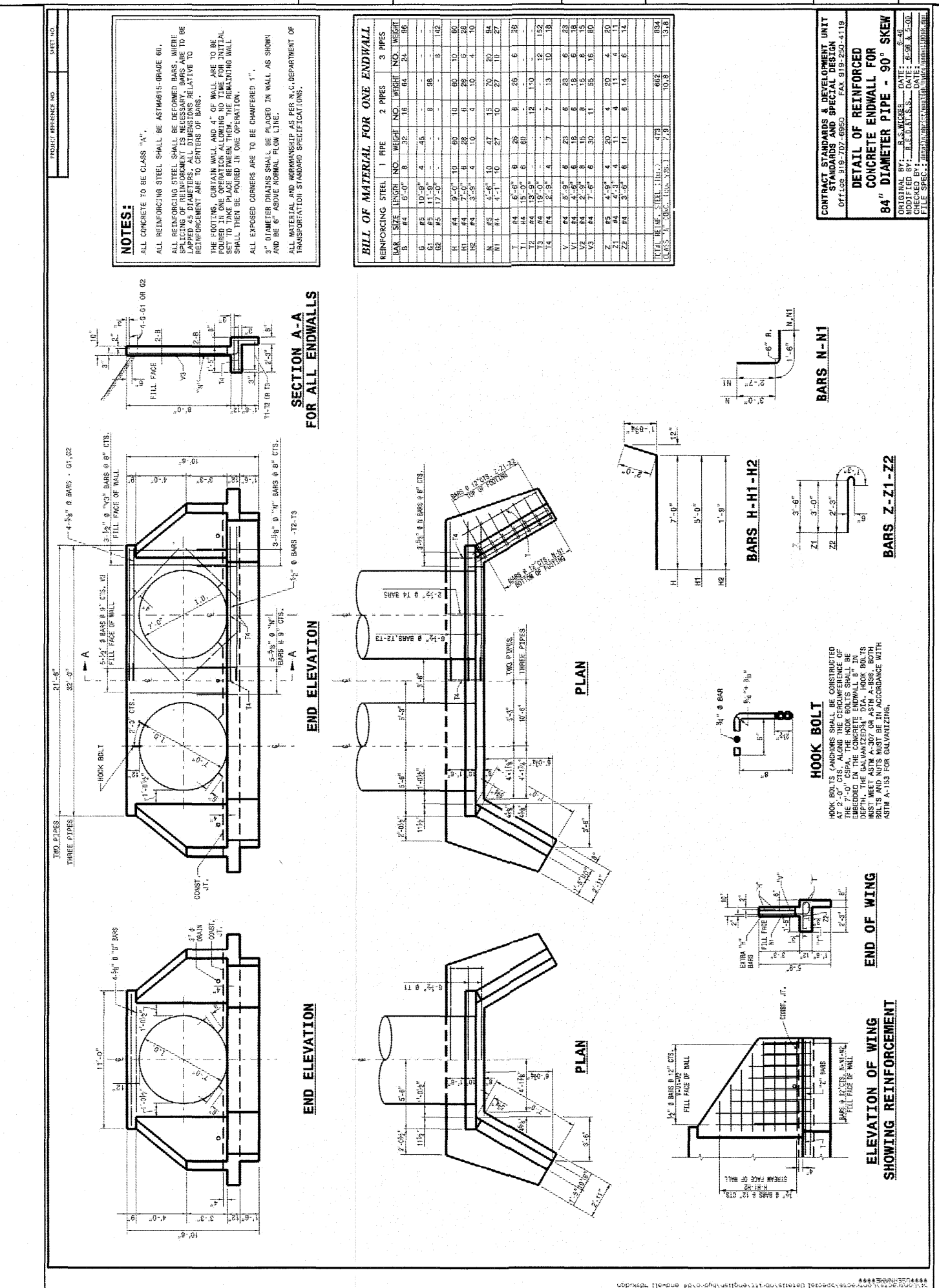


NOTE 1 - "WATER" LETTERING MUST BE 1" RAISED (RECESSED FLUSH)  
NOTE 2 - VALVE COVER SHALL BE DOMESTICALLY CAST.  
NOTE 3 - COVER MUST HAVE A MINIMUM WEIGHT OF 25 POUNDS.  
NOTE 4 - COVER MUST BE CLASS 35 OR GREATER.  
NOTE 5 - COVER MUST MEET OR EXCEED AASHTO H-20 LOAD REQUIREMENTS.

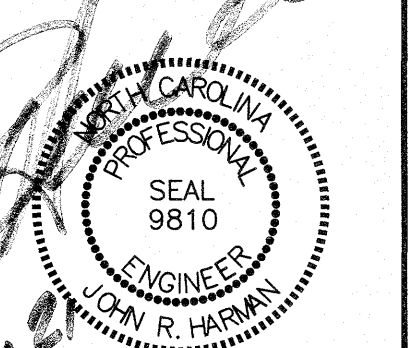
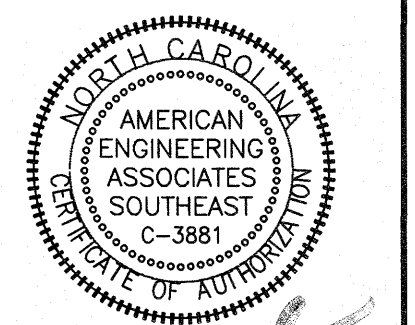
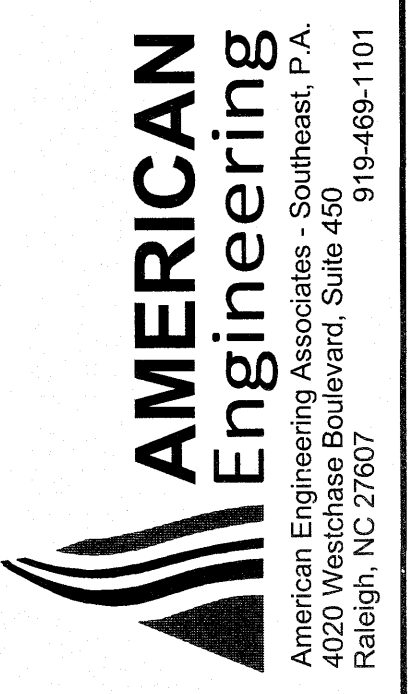
NOTES:  
1) ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST  
2) FRAME SHALL BE A MINIMUM WEIGHT OF 162 LBS.  
3) COVER SHALL WEIGH A MIN. OF 120 LBS.  
4) MANHOLES WITHIN PAVED SURFACES SHALL BE CONSTRUCTED IN ACCORDANCE WITH 5-29.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
5 1/4\"/>				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-18				

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD MANHOLE COVER				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-20	A.B.B.	4-8-04		
	D.H.L.	6-18-06		



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION				
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City of Raleigh Development Approval _____				
Raleigh Water Review Officer _____				



DETAIL SELECTION ONLY

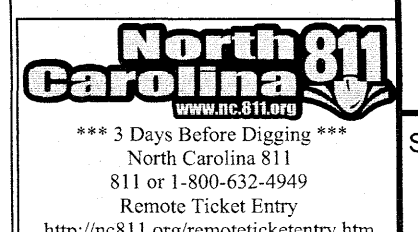
NO.	DATE	REVISION

STIPULATION FOR REUSE  
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR CHANGE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

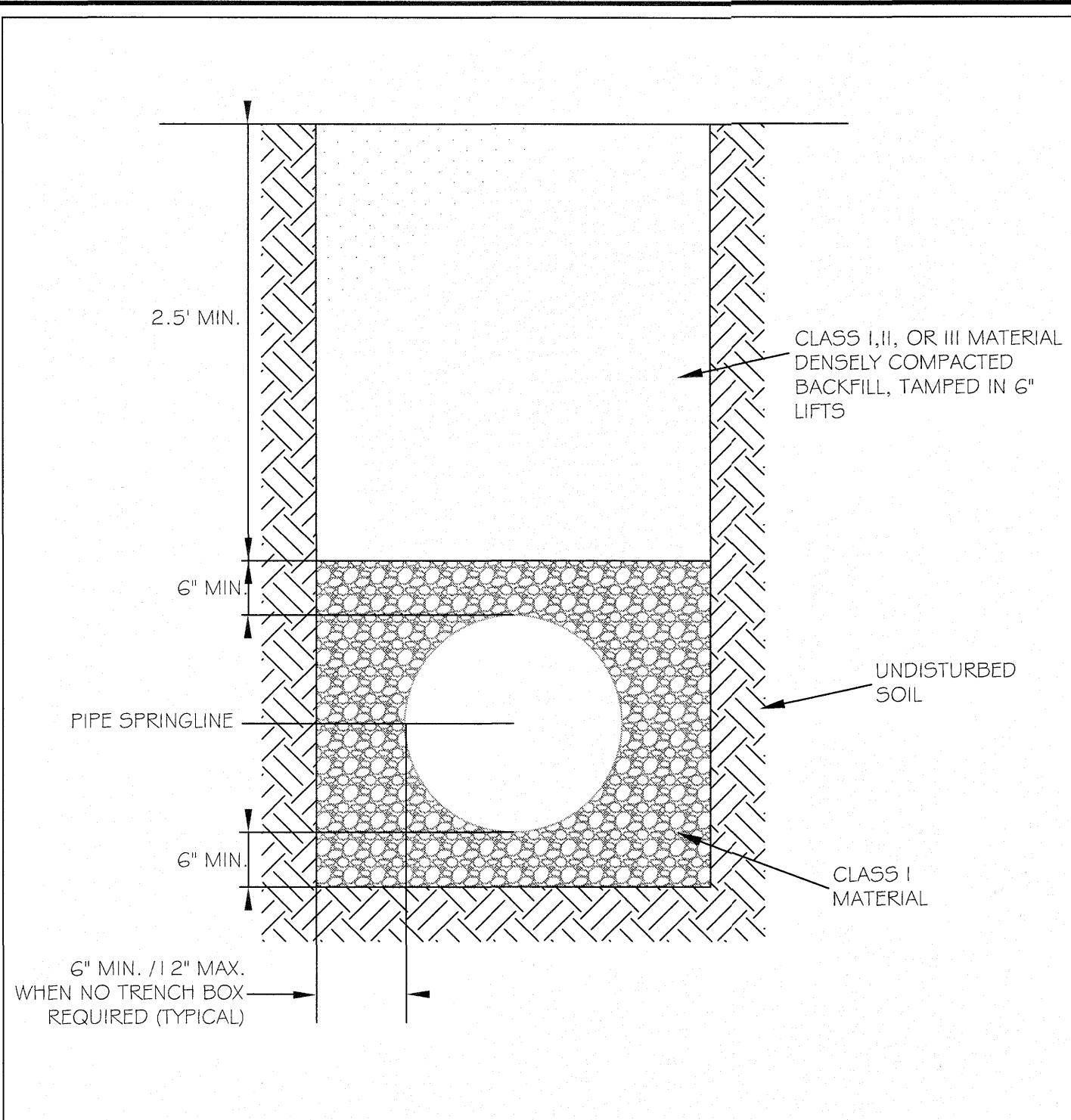
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
WATER METER BOX DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
W-25	D.W.C.	11-3-99	ABB	1-20-05
	RRH	12-31-00	J.P.S.	11-4-10

JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	KALAS FALLS CIVIL DETAILS
SHEET NO.:	CD8

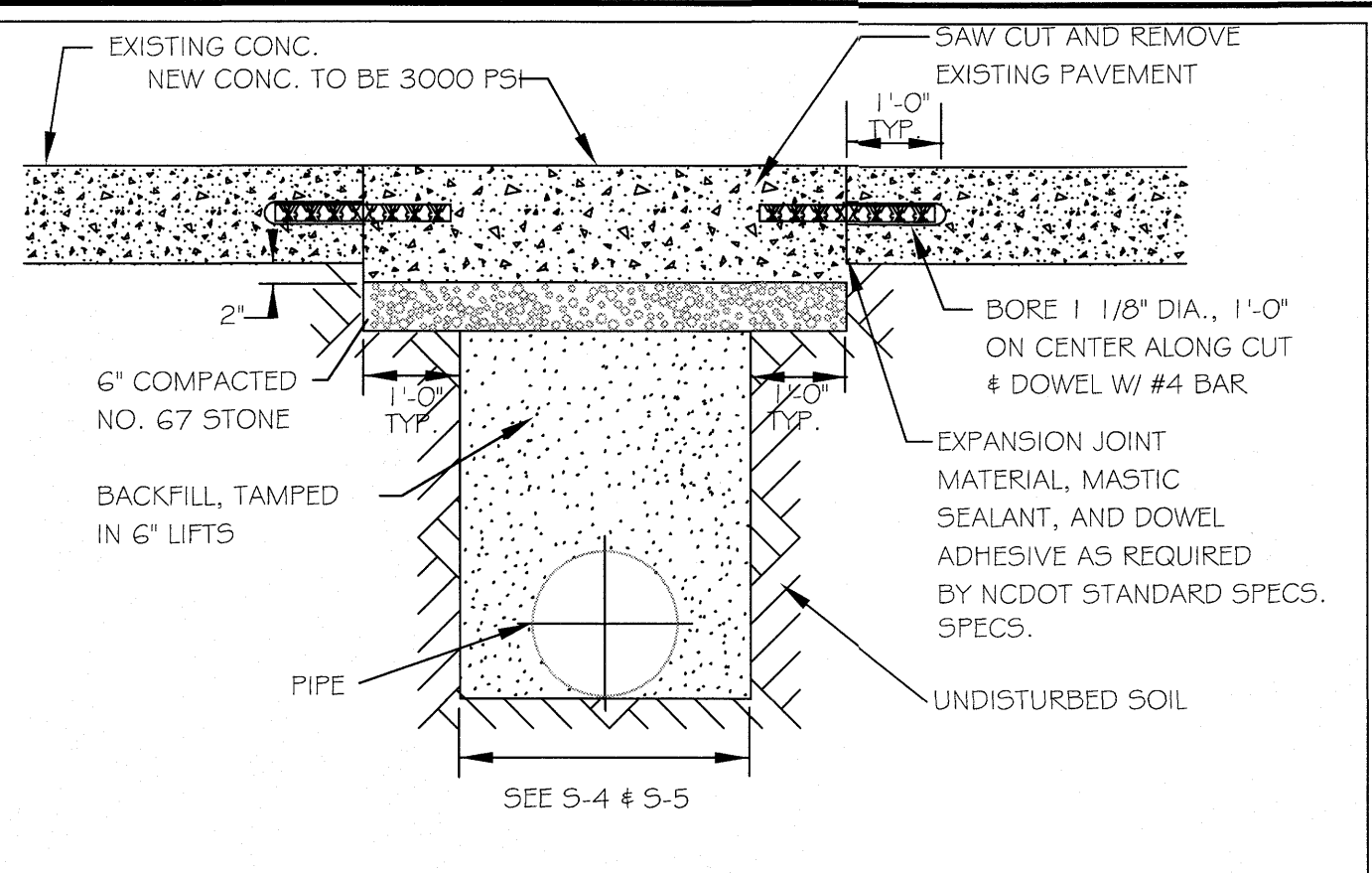


\*\*\* 3 Days Before Digging \*\*\*  
North Carolina 811  
811 or 1-800-652-4949  
Remote Ticket Entry  
<http://nc811.org/remoteticketentry.htm>





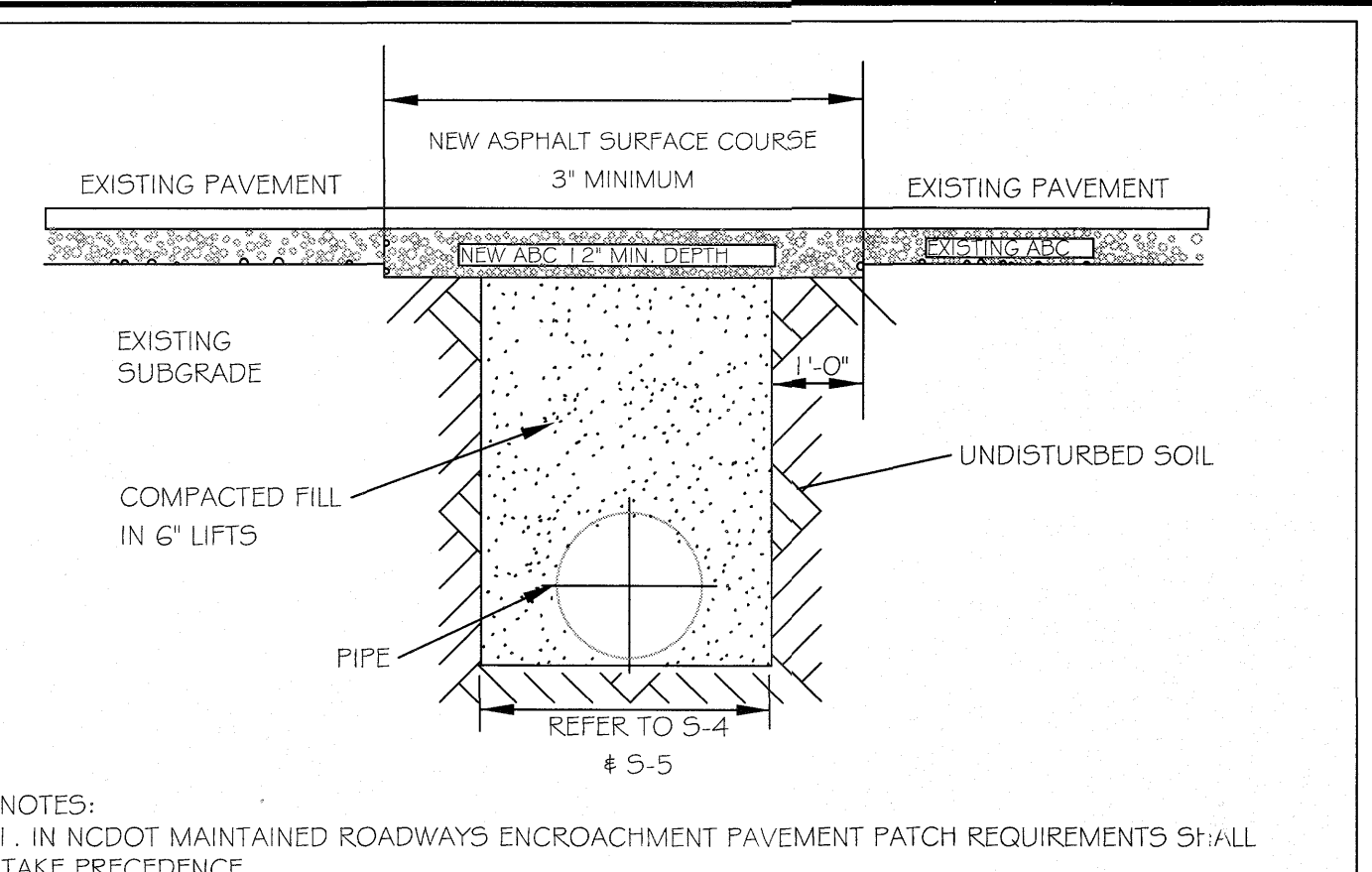
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD BEDDING DETAILS FOR CCFRPM PIPES				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-1	J.P.S.	10-8-10		



NOTES:

- See City of Raleigh standards for trenches and pipe bedding (S-4 & S-5) for additional details.
- Pavement cuts over 5'-0" in width shall be reinforced to N.C.D.O.T. standards.
- Pavement cuts shall be made with an appropriate saw cut machine.
- Pavement cuts within NCDOT ROW shall conform to the approved on site encroachment permit.

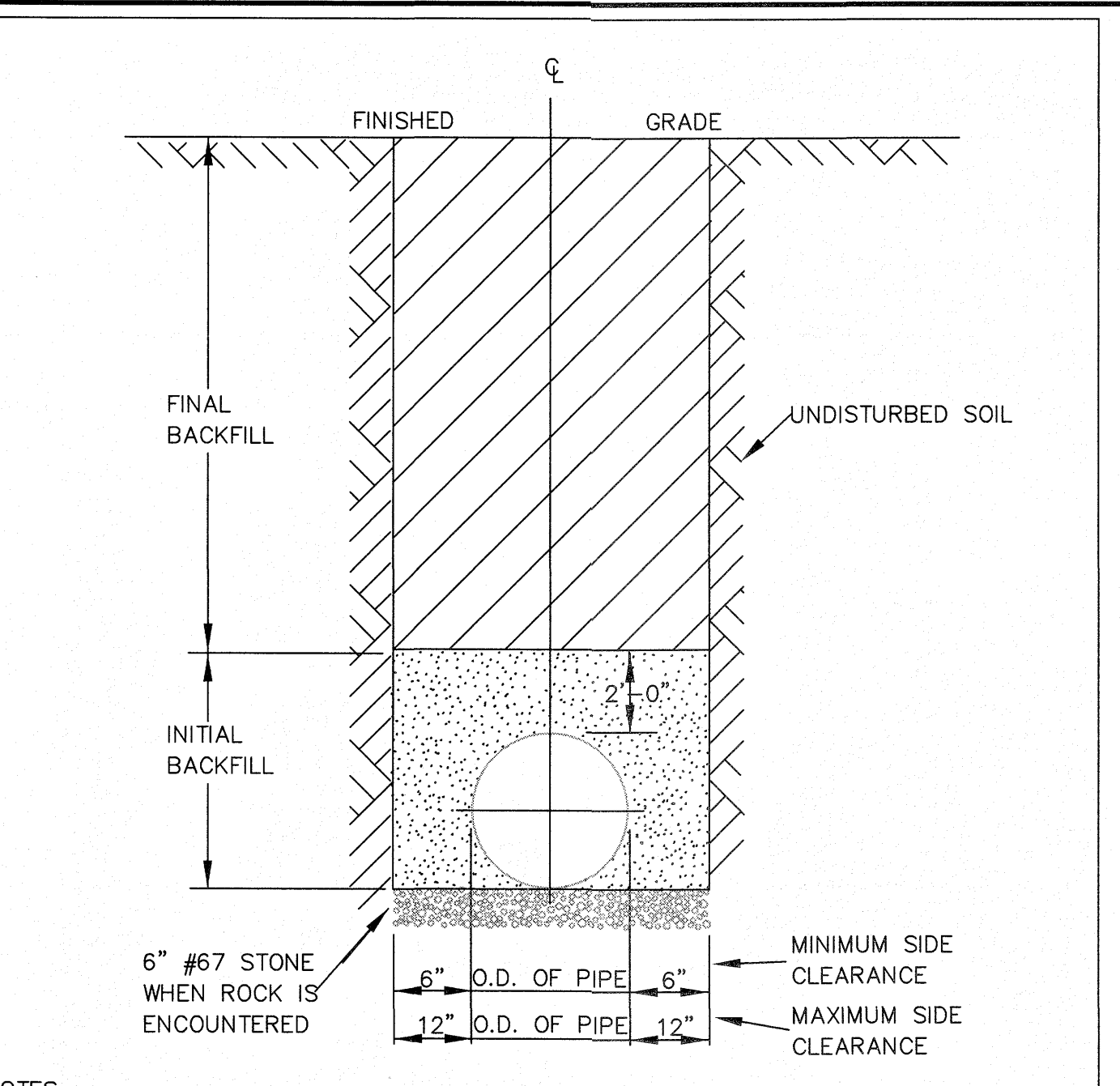
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD CONCRETE PAVEMENT PATCH DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-2	D.W.C.	6-23-99	A.B.B.	4-19-04
	RRH	3-30-00	J.P.S.	10-8-10



NOTES:

- IN NCDOT MAINTAINED ROADWAYS ENCROACHMENT PAVEMENT PATCH REQUIREMENTS SHALL TAKE PRECEDENCE.
- THE PAVEMENT CUT SHALL BE DEFINED BY A STRAIGHT EDGE AND CUT WITH AN APPROPRIATE SAWCUT MACHINE.
- THE TRENCH SUBGRADE MATERIAL SHALL BE BACKFILLED WITH SUITABLE MATERIAL AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY NCDOT.
- THE FINAL 1" OF FILL SHALL CONSIST OF ABC MATERIAL COMPACTED TO A DENSITY EQUAL TO 100% OF THAT OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH AASHTO T-80 AS MODIFIED BY NCDOT.
- THE ENTIRE THICKNESS AND VERTICAL EDGE OF CUT SHALL BE TACKED.
- THE SAME DEPTH OF PAVEMENT MATERIAL WHICH EXISTS SHALL BE REINSTALLED, BUT IN NO CASE SHALL THE ASPHALT BE LESS THAN 3" THICK.
- THE ASPHALT PAVEMENT MATERIAL SHALL BE INSTALLED AND COMPACTED THOROUGHLY WITH A SMOOTH DRUM ROLLER TO ACHIEVE A SMOOTH LEVEL PATCH.
- REFER TO CITY OF RALEIGH STANDARDS FOR TRENCHES AND PIPE BEDDING (S-4 & S-5) FOR ADDITIONAL DETAILS.
- NO HAND PATCHING ALLOWED.
- PAVEMENT CUTS WITHIN NCDOT ROW SHALL CONFORM TO THE APPROVED ON SITE ENCROACHMENT PERMIT.

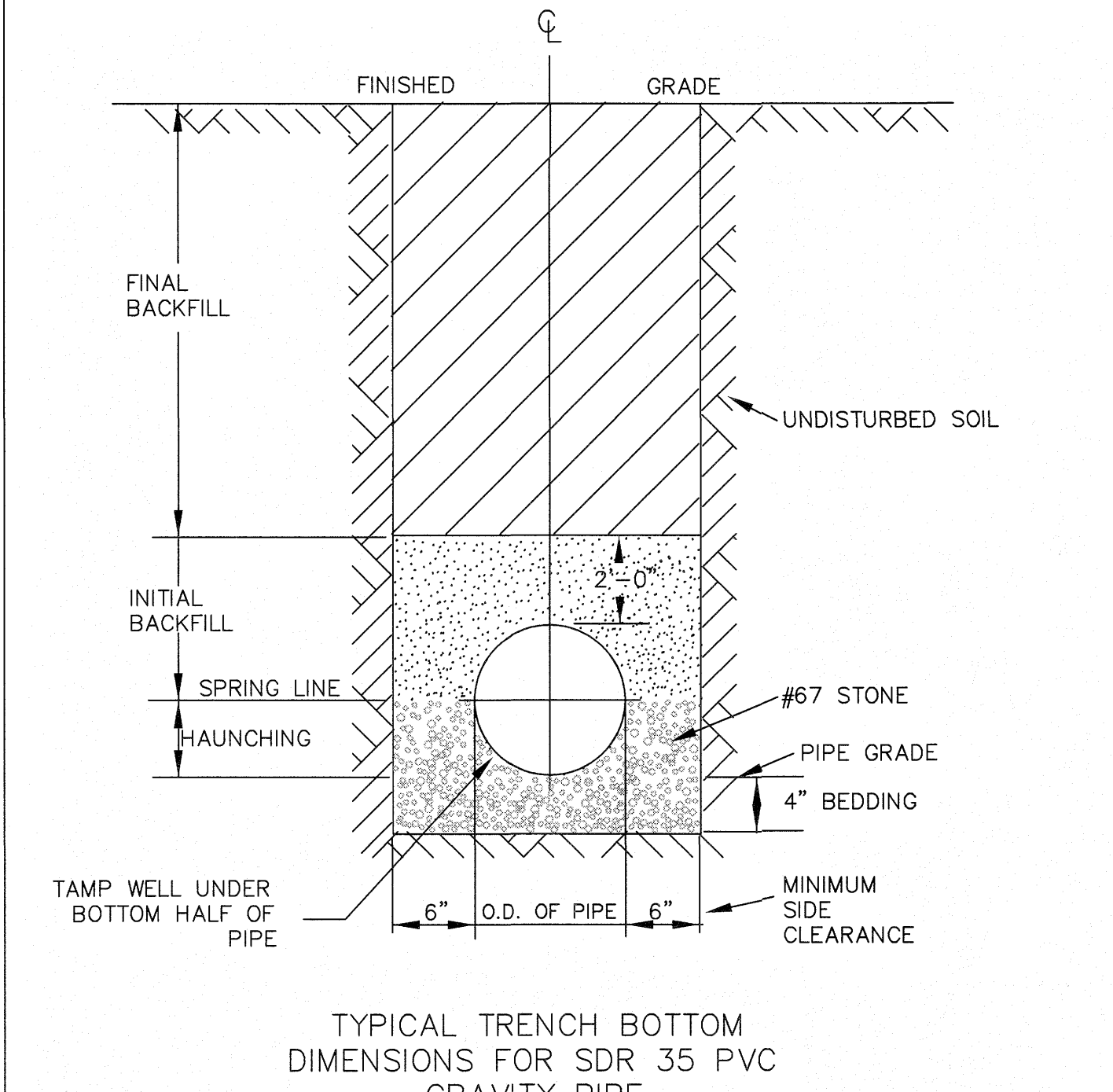
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD ASPHALT PAVEMENT PATCH DETAIL				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-3	D.W.C.	1-1-99	A.B.B.	4-19-04
	RRH	3-30-00	J.P.S.	10-8-10



NOTES:

- TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
- NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
- ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
- BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.
- ACHIEVE 80% COMPACTION IN NON-TRAFFIC AREAS, AND 95% COMPACTION IN TRAFFIC AREAS.
- IF IN EASEMENT 4" TOPSOIL, AND 12" CLEAN SELECT FILL MAY BE REQUIRED.
- NO BOULDERS 8" IN DIAMETER OR GREATER ALLOWED IN FINAL BACKFILL.

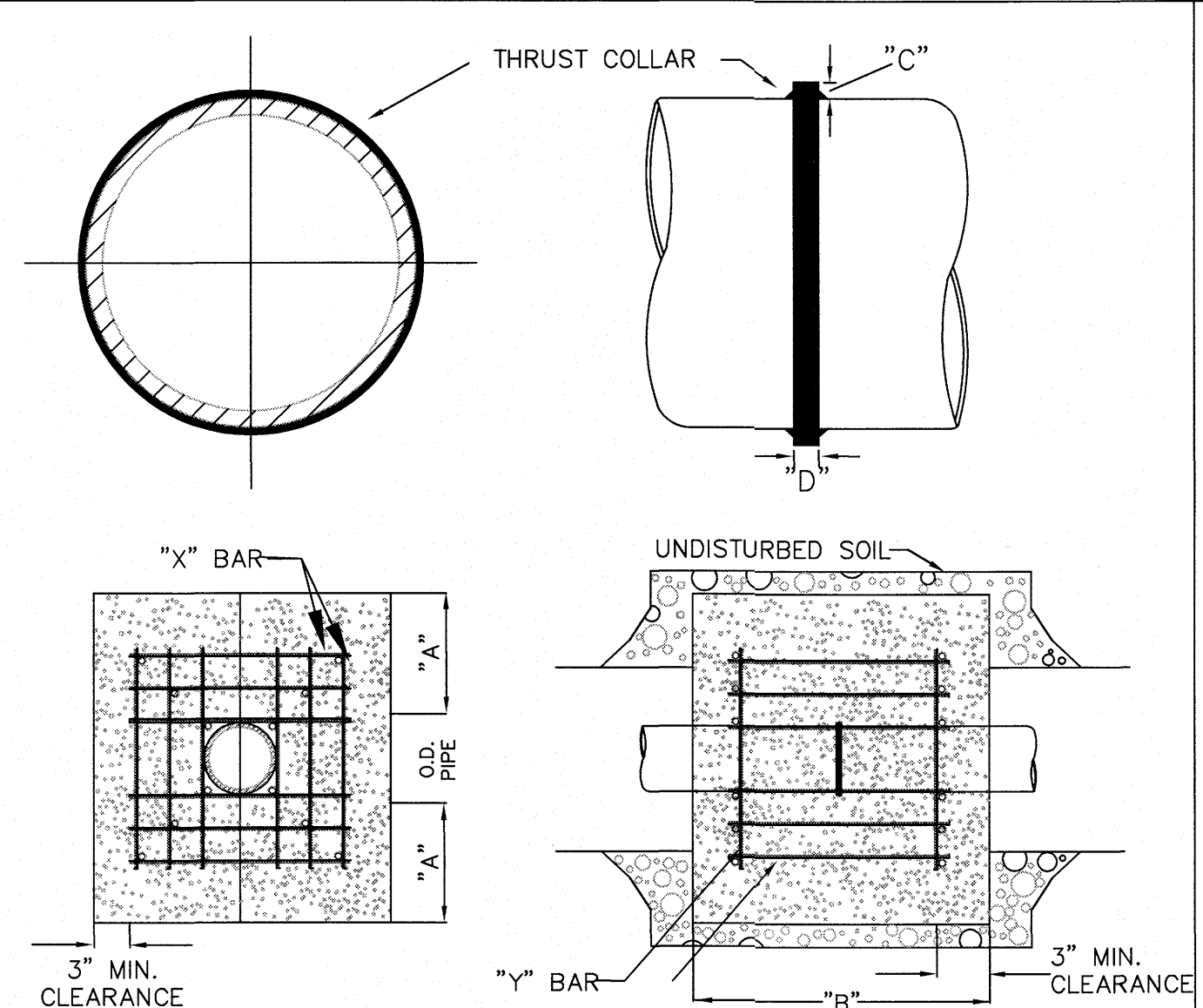
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C.	9-3-99		
	RRH	5-30-00		



NOTES:

- FOR TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.
- NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
- ALL BACKFILL MATERIAL SHALL BE SUITABLE NATIVE MATERIAL.
- BACKFILL SHALL BE TAMPED IN 6" LIFTS IN TRAFFIC AREAS, 12" IN NON-TRAFFIC AREAS.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS AND BACKFILLING REQUIREMENTS FOR PVC GRAVITY SEWER MAIN				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-5	TO NOTES	3-1-87	D.W.C.	9-3-99
		7-2-82	RRH	3-30-00



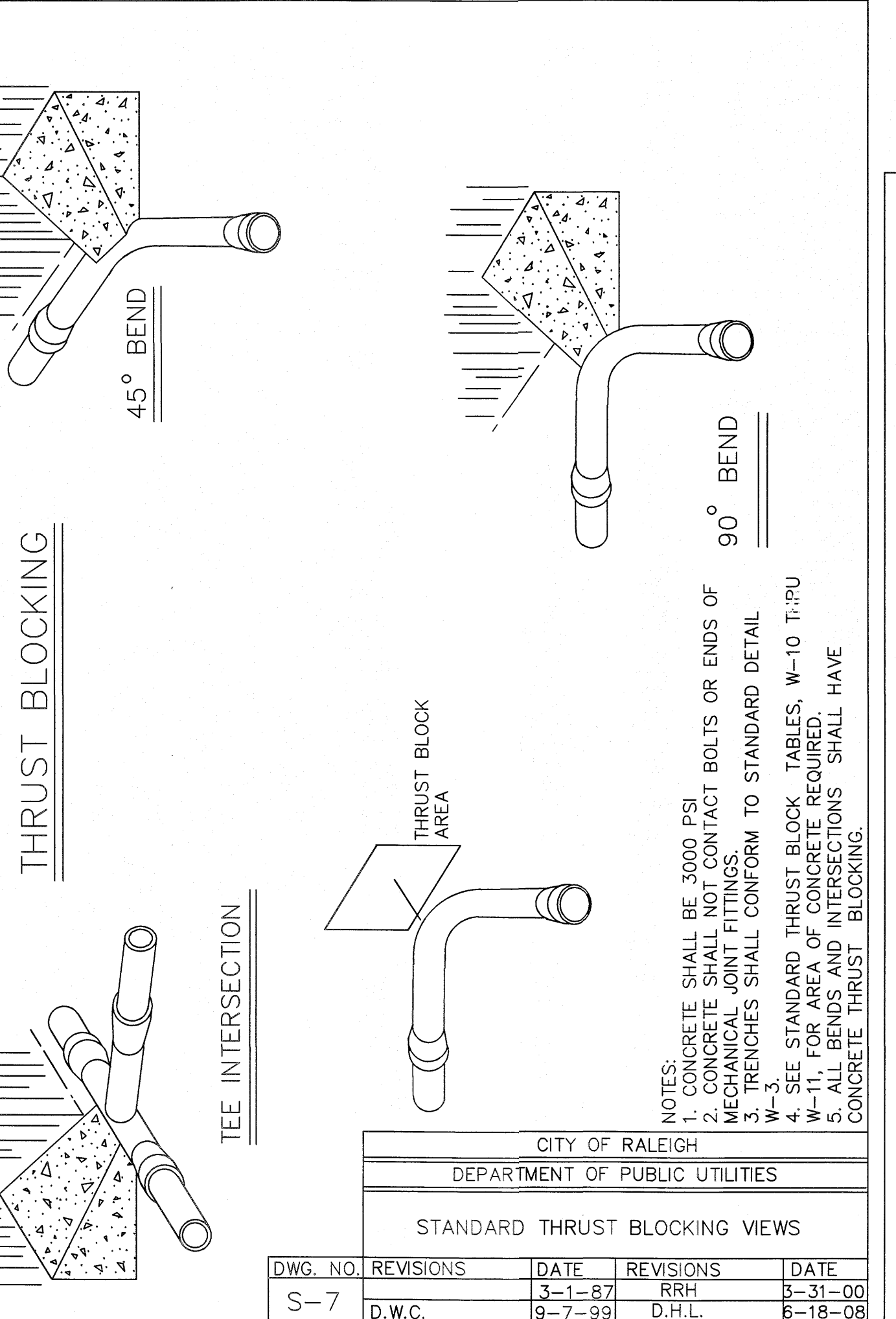
REINFORCING REQUIREMENTS

I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WEIGHT	"Y" BAR LENGTH	"Y" BAR WEIGHT	NO. REQUIRED
6" - 36"	#5	2'-2" + O.D. PIPE	1.043 LBS/FT	1'-1"	1.1 LBS. EACH	X-24, Y-12
48" & greater	#6	3'-0" + O.D. PIPE	1.502 LBS/FT	1'-3"	1.9 LBS. EACH	X-24, Y-12

THRUST COLLAR AND THRUST SCHEDULE

I.D. PIPE	"A"	"B"	"C"	"D"
6" - 16"	1'-4"	1'-7"	2"	3/8"
20" - 24"	1'-4"	1'-7"	3"	1/2"
30" - 36"	1'-4"	1'-7"	4"	5/8"
48" & greater	1'-8"	1'-9"	6"	7/8"

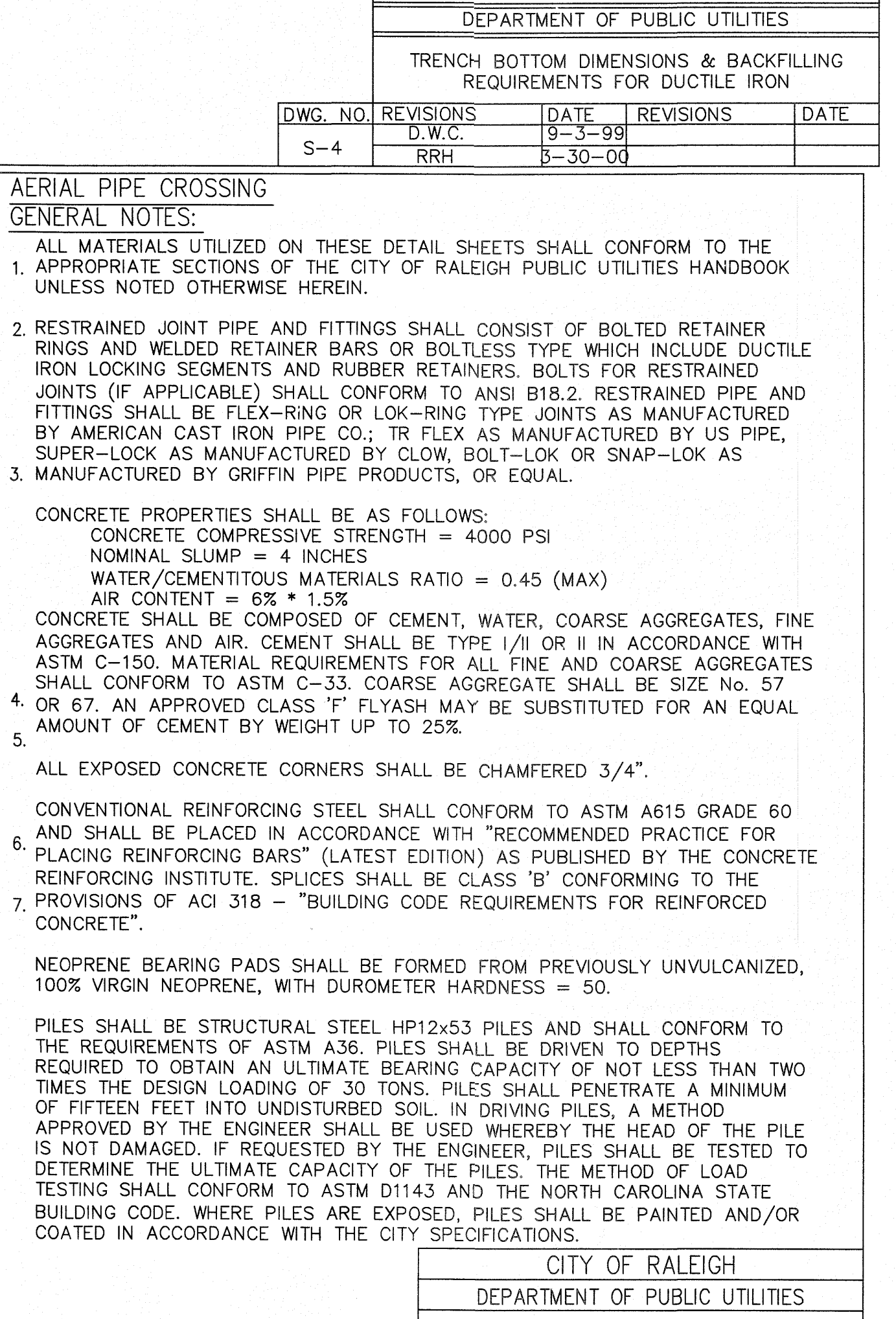
CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
RESTRAINING COLLAR DESIGN DATA FOR SEWER FORCE MAIN				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-6	RRH	1-21-00		
	D.H.L.	6-18-08		



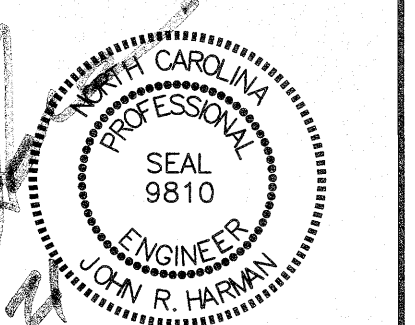
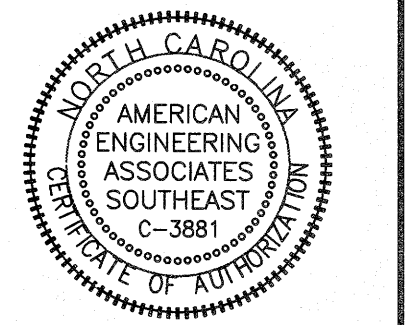
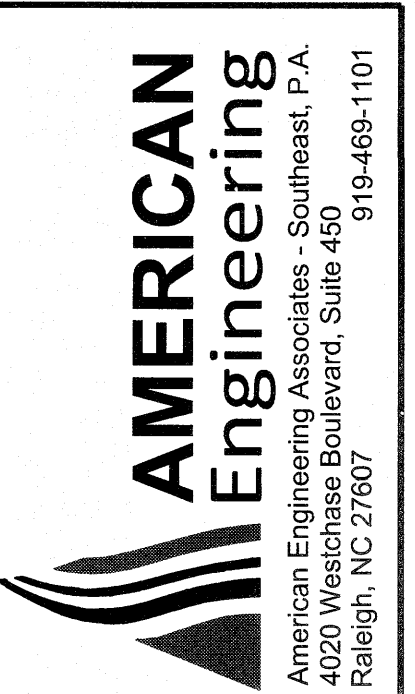
NOTES:

- CONCRETE SHALL BE 3000 PSI
- CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
- TRENCHES SHALL CONFORM TO STANDARD DETAIL W-3.
- SEE STANDARD THRUST BLOCK TABLES, W-10 THROUGH W-11, FOR AREA OF CONCRETE REQUIRED.
- ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
STANDARD THRUST BLOCKING VIEWS				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-7	D.W.C.	3-1-87	RRH	5-31-00
	D.H.L.	9-7-99	D.H.L.	6-18-08



CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
AERIAL PIPE CROSSING GENERAL NOTES				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-10	D.H.L.	6/16/08		



DETAIL SELECTION ONLY

CITY OF RALEIGH				
DEPARTMENT OF PUBLIC UTILITIES				
TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON				
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-4	D.W.C.	9-3-99		
	RRH	5-30-00		

STIPULATION FOR REUSE

THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.

KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

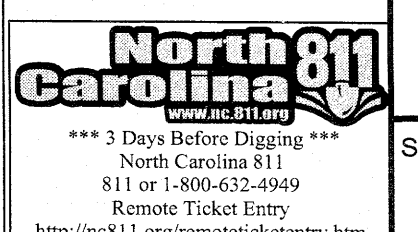
JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	KALAS FALLS CIVIL DETAILS
SHEET NO.:	CD9

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

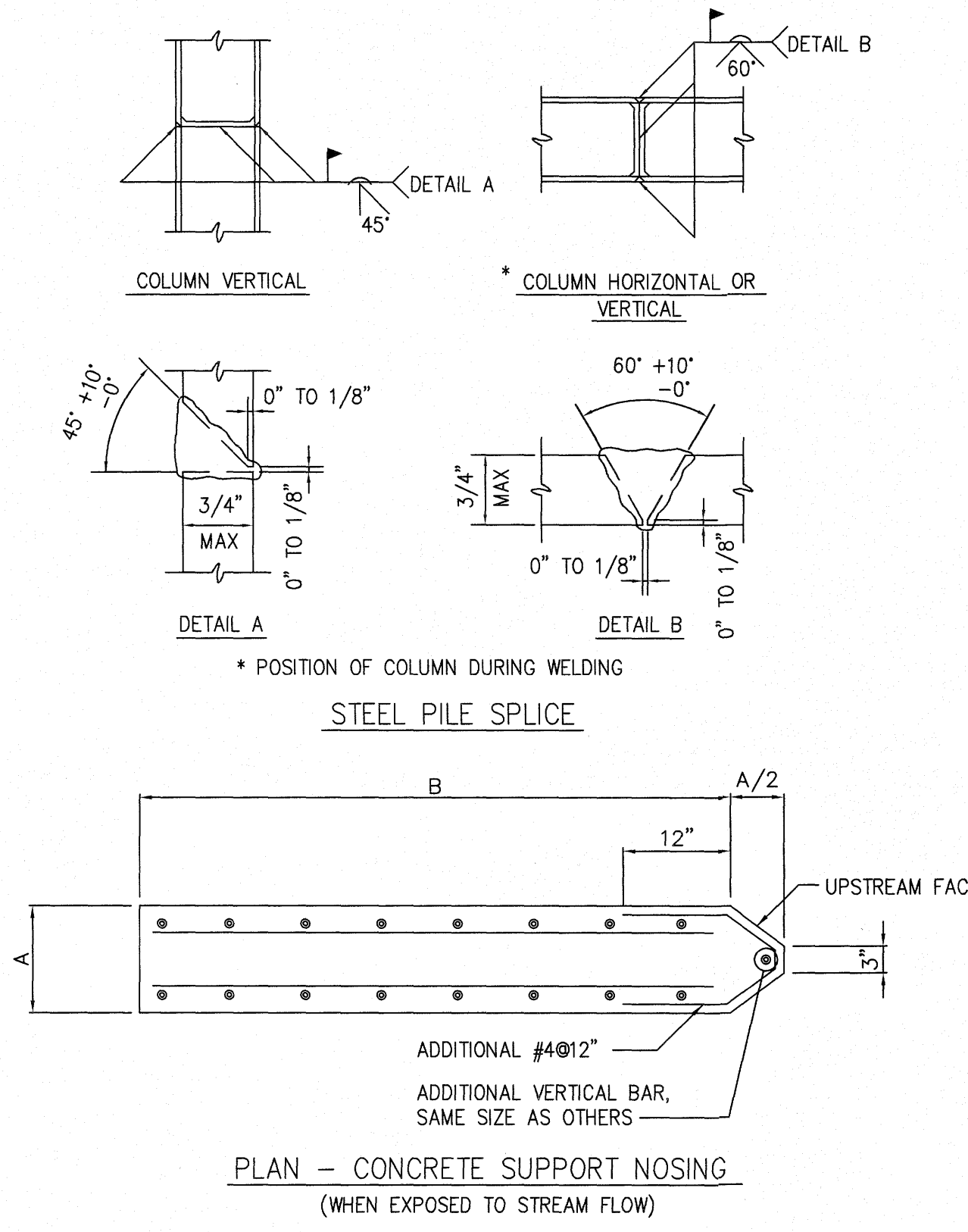
Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.

City of Raleigh Development Approval \_\_\_\_\_

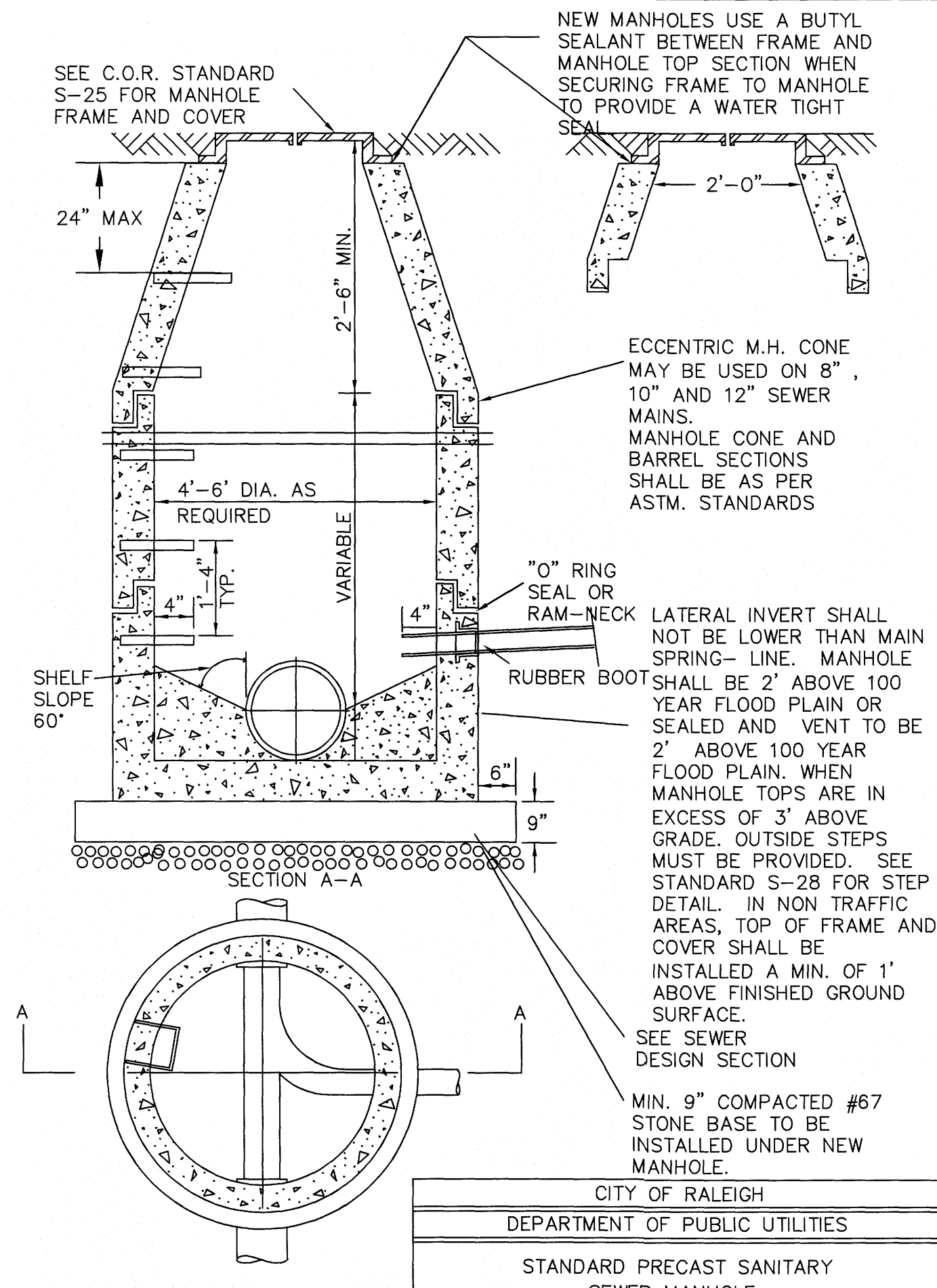
Raleigh Water Review Officer \_\_\_\_\_



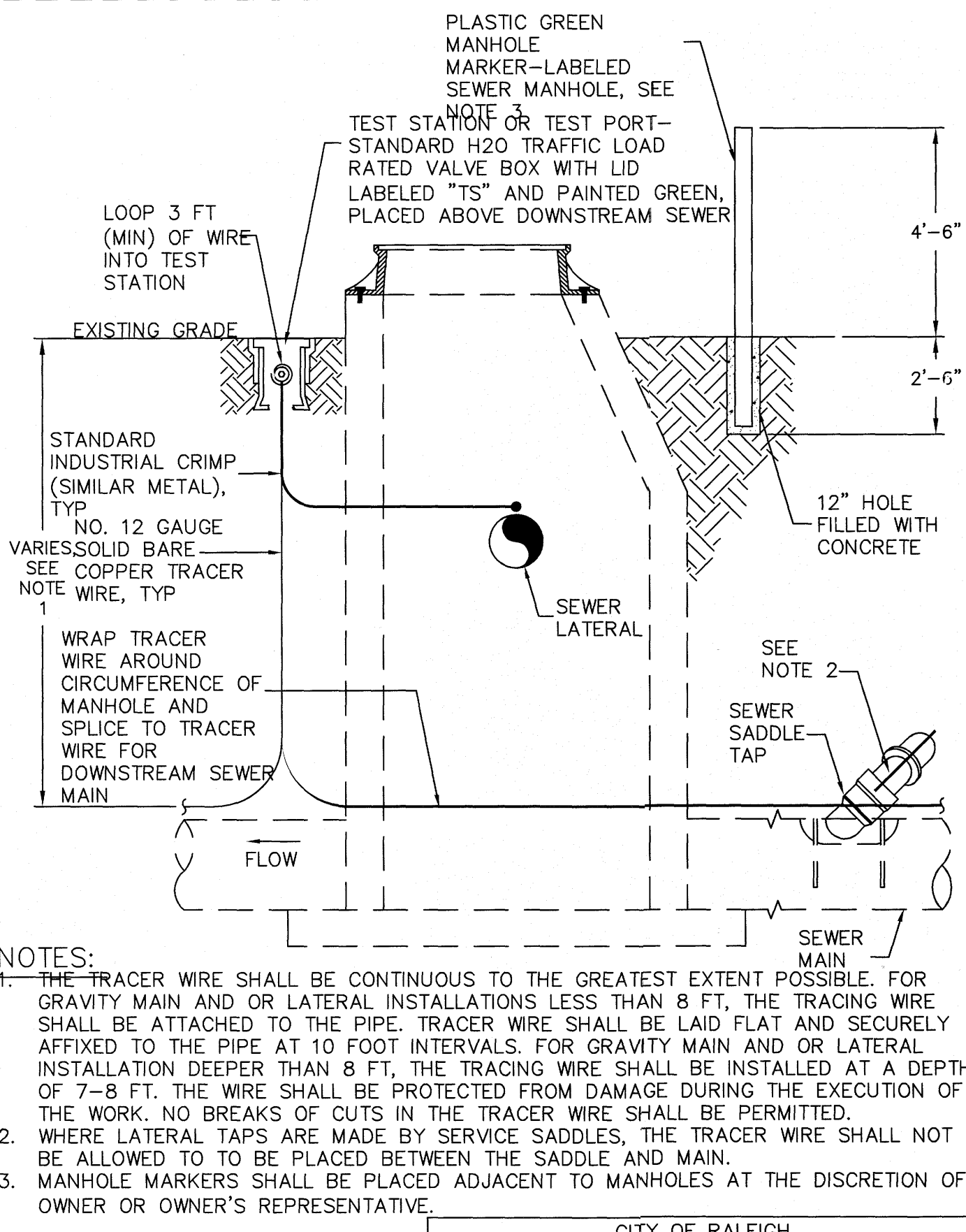




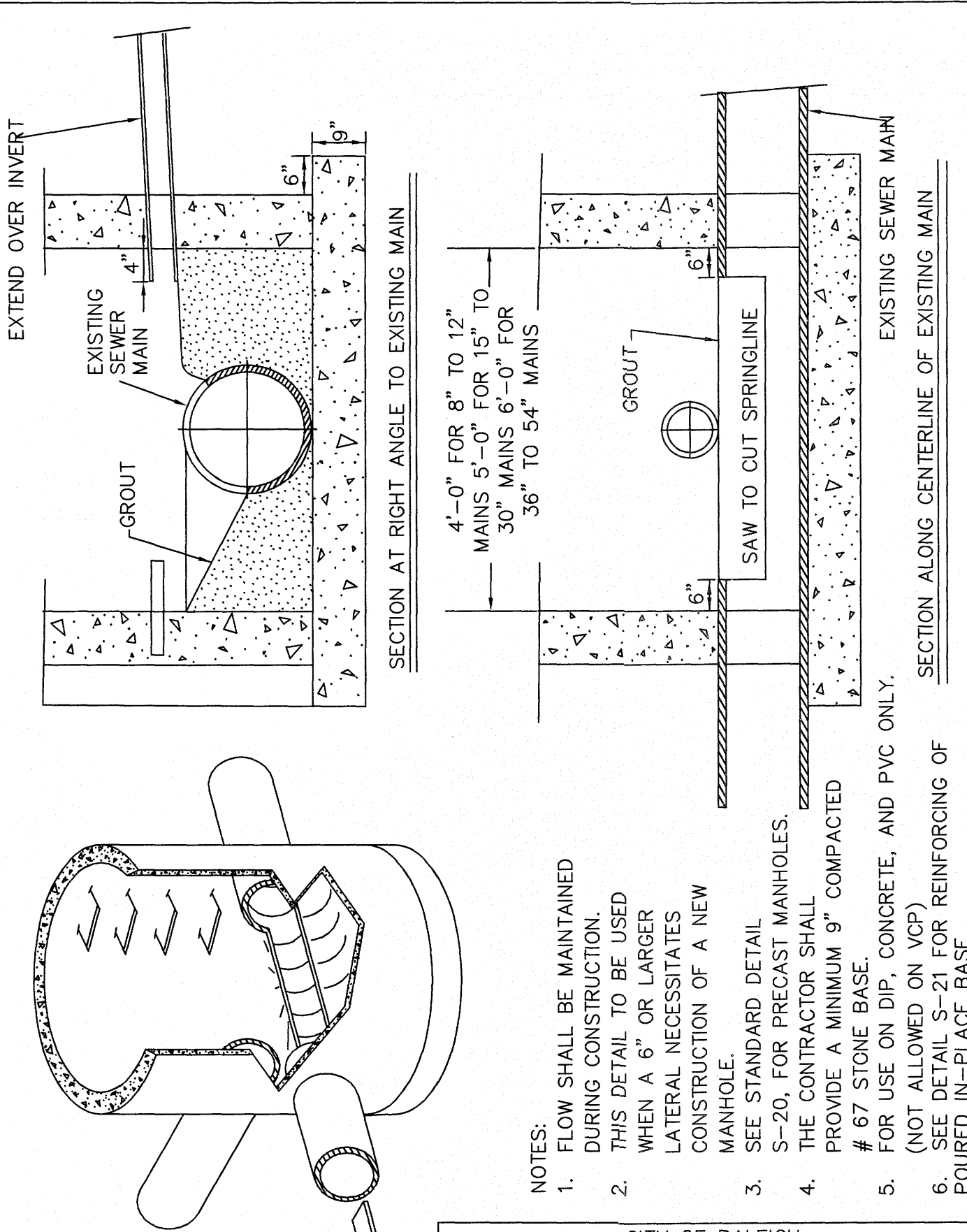
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-19		6/16/08		



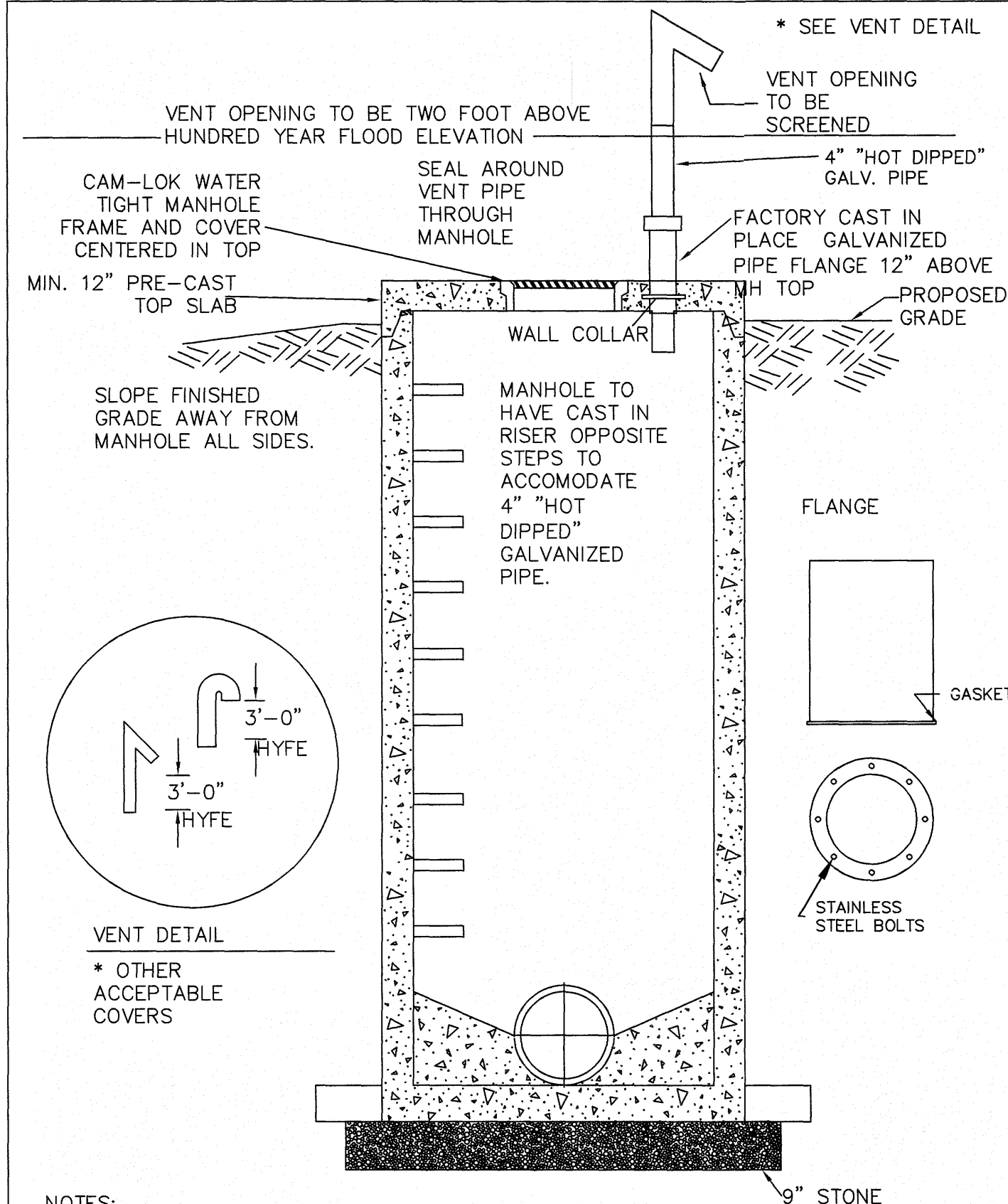
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20		12-31-92		2-21-05
		3-30-04		6-16-08



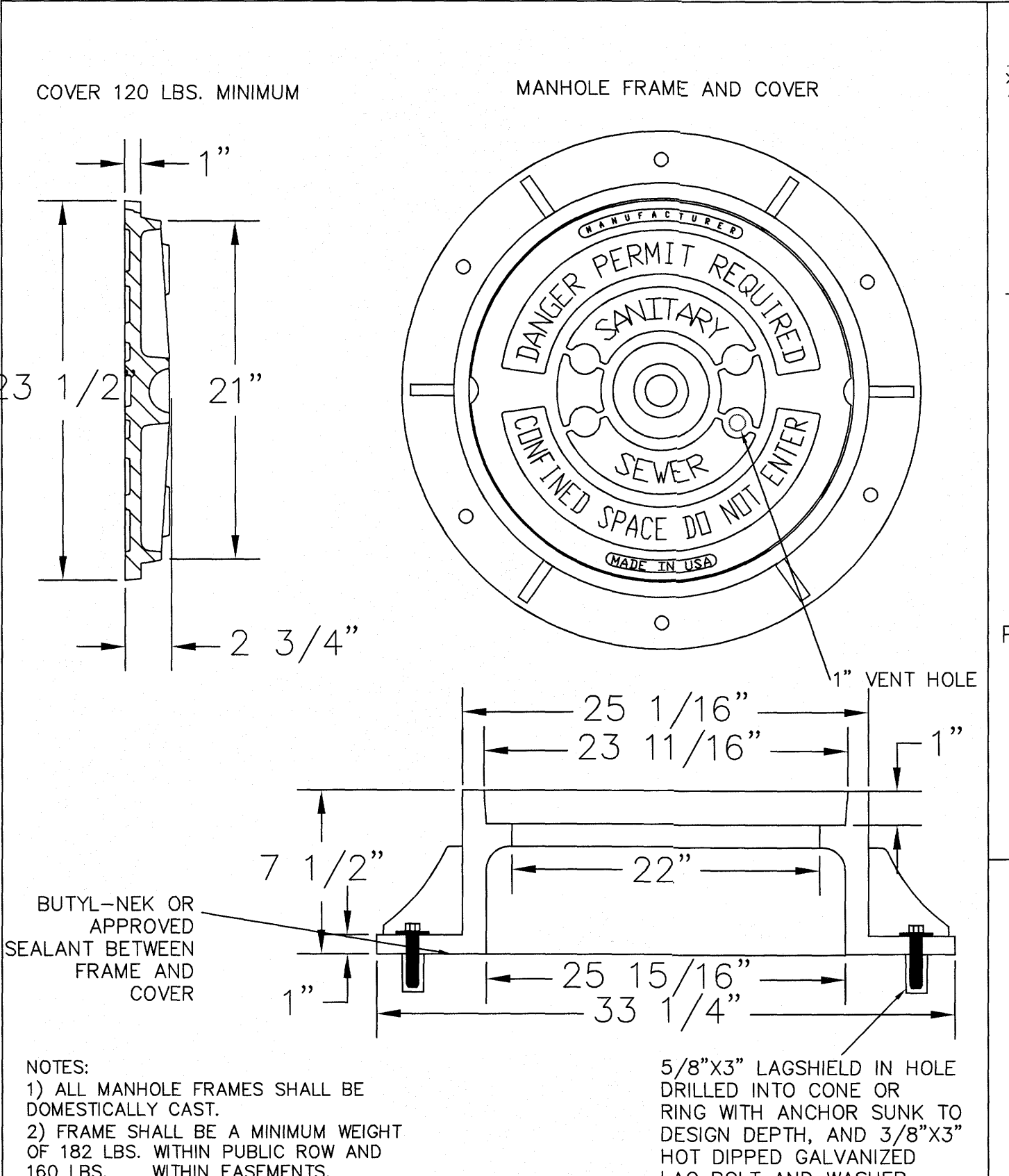
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-20A		09-14		



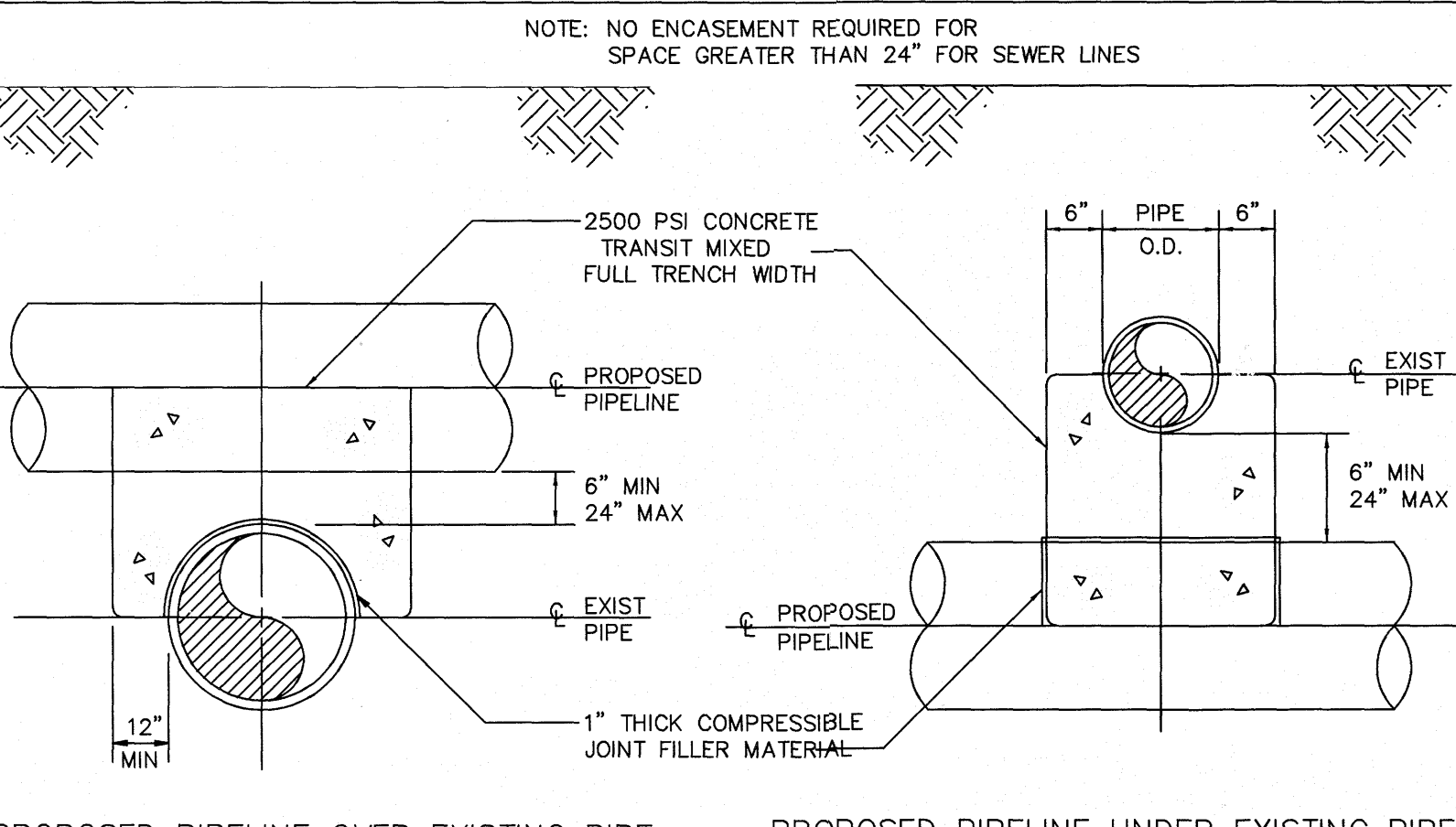
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-22		12-31-91		1-19-05
		3-30-00		6/16/08



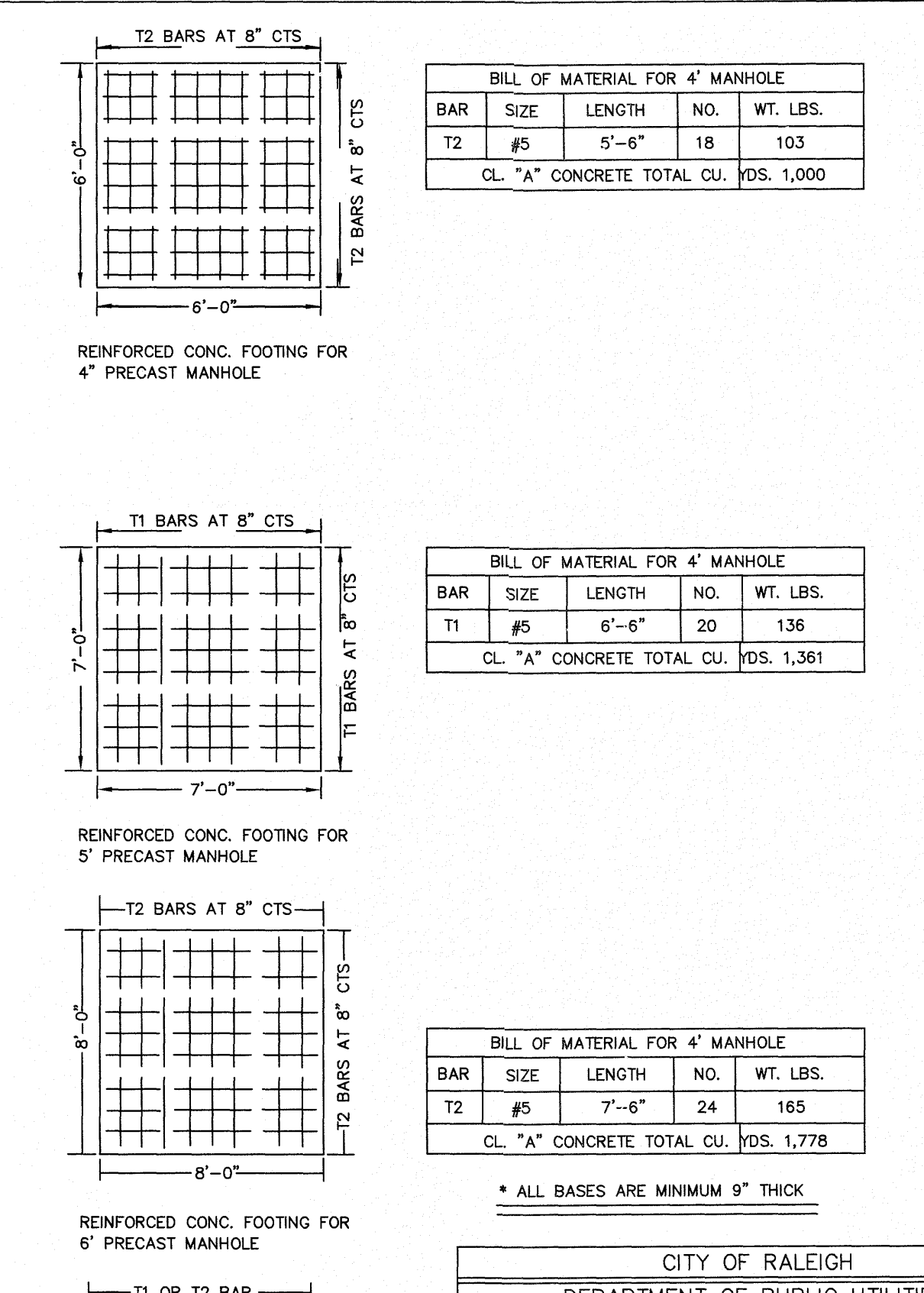
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-24		6-7-99		4-15-04
		3-30-00		6/16/08



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-25		3-1-87		2-9-05
		3-30-00		6-16-08



DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-49		2-20-08		

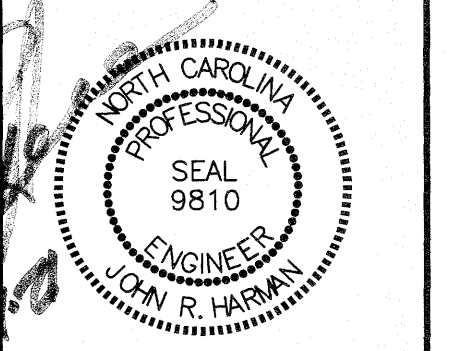
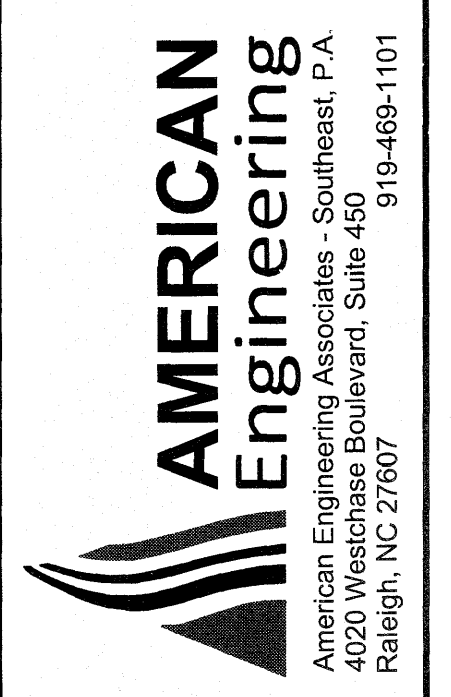


BAR	SIZE	LENGTH	NO.	WT. LBS.
T2	#5	5'-6"	18	103
CL. "A" CONCRETE TOTAL CU. YDS. 1,000				

BAR	SIZE	LENGTH	NO.	WT. LBS.
T1	#5	6'-6"	20	136
CL. "A" CONCRETE TOTAL CU. YDS. 1,361				

BAR	SIZE	LENGTH	NO.	WT. LBS.
T2	#5	7'-6"	24	165
CL. "A" CONCRETE TOTAL CU. YDS. 1,778				

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE
S-21		3-1-87		2-9-05
		3-30-00		



DETAIL SELECTION ONLY

NO.	DATE	REVISION

STIPULATION FOR REUSE  
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KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

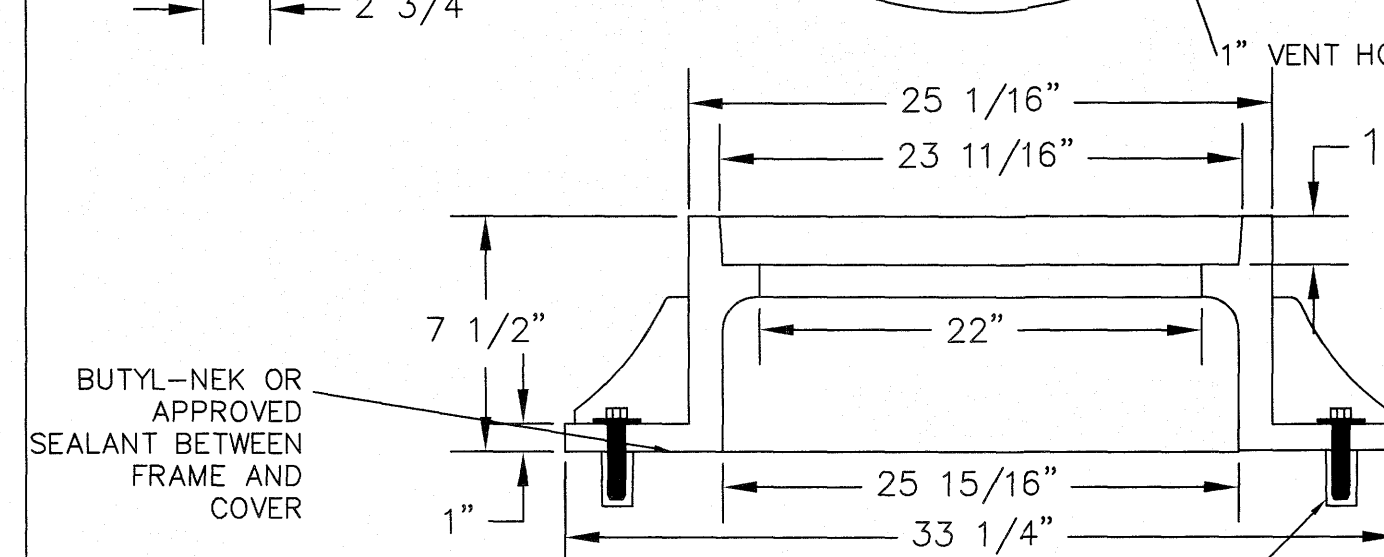
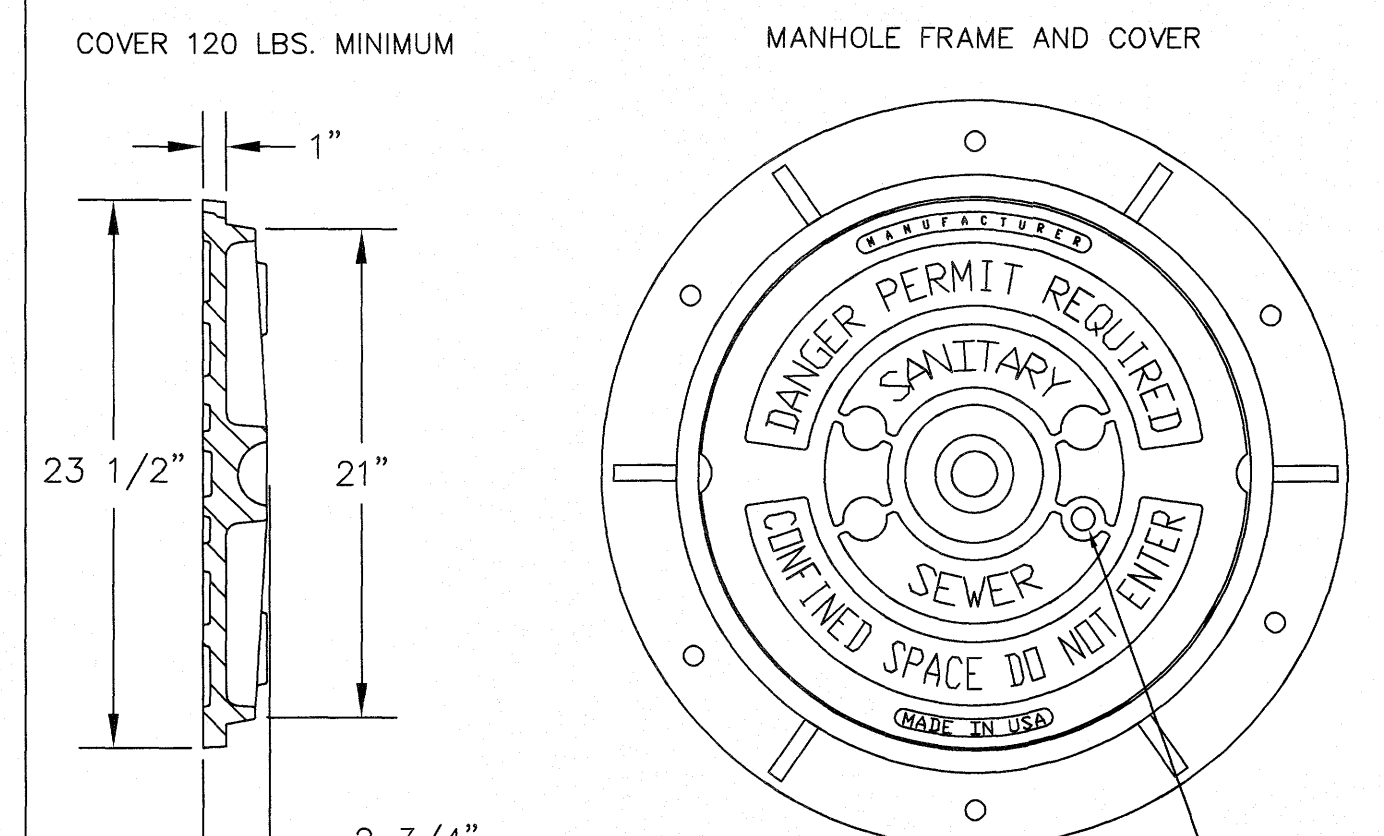
JOB NUMBER:	9900
CHECKED BY:	
DRAWN BY:	
DATE:	FEB 18, 2021
SHEET TITLE:	

KALAS FALLS  
CIVIL DETAILS  
SHEET NO.:  
CD10

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION  
Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans kept on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.  
City of Raleigh Development Approval \_\_\_\_\_  
Raleigh Water Review Officer





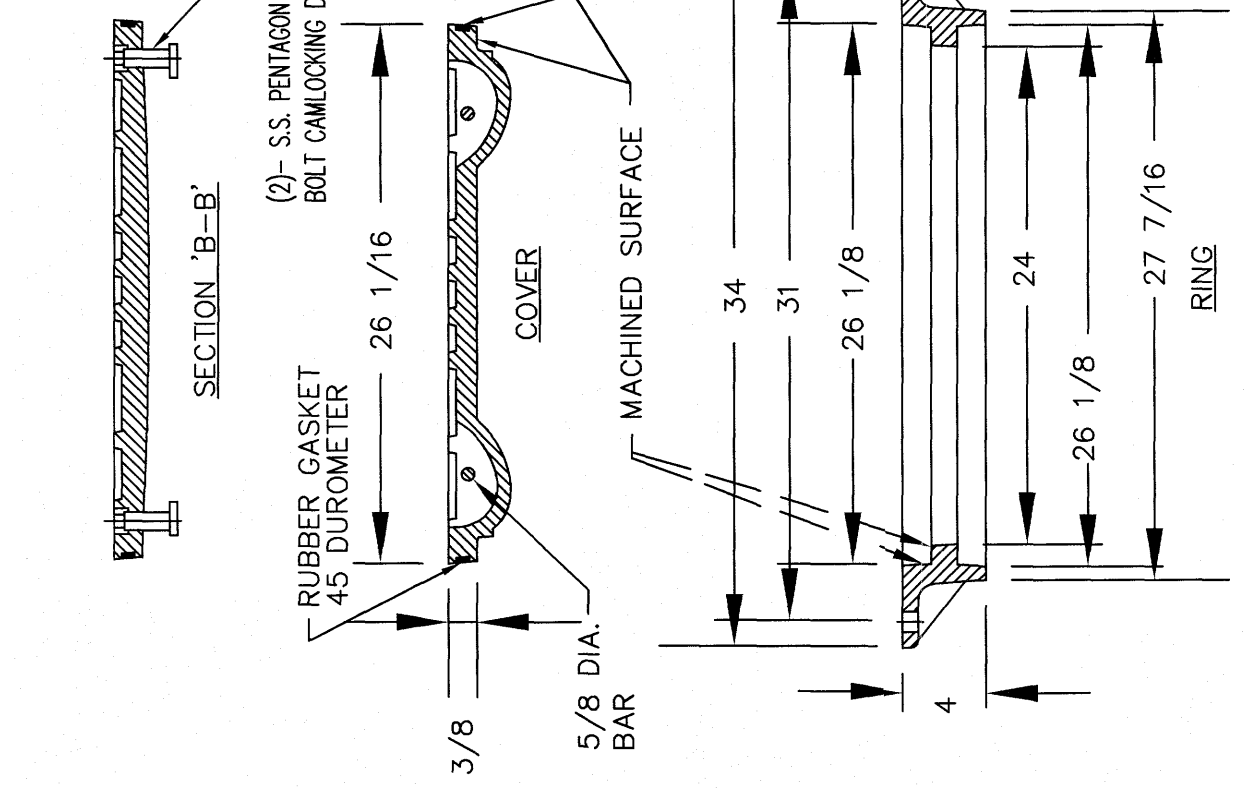
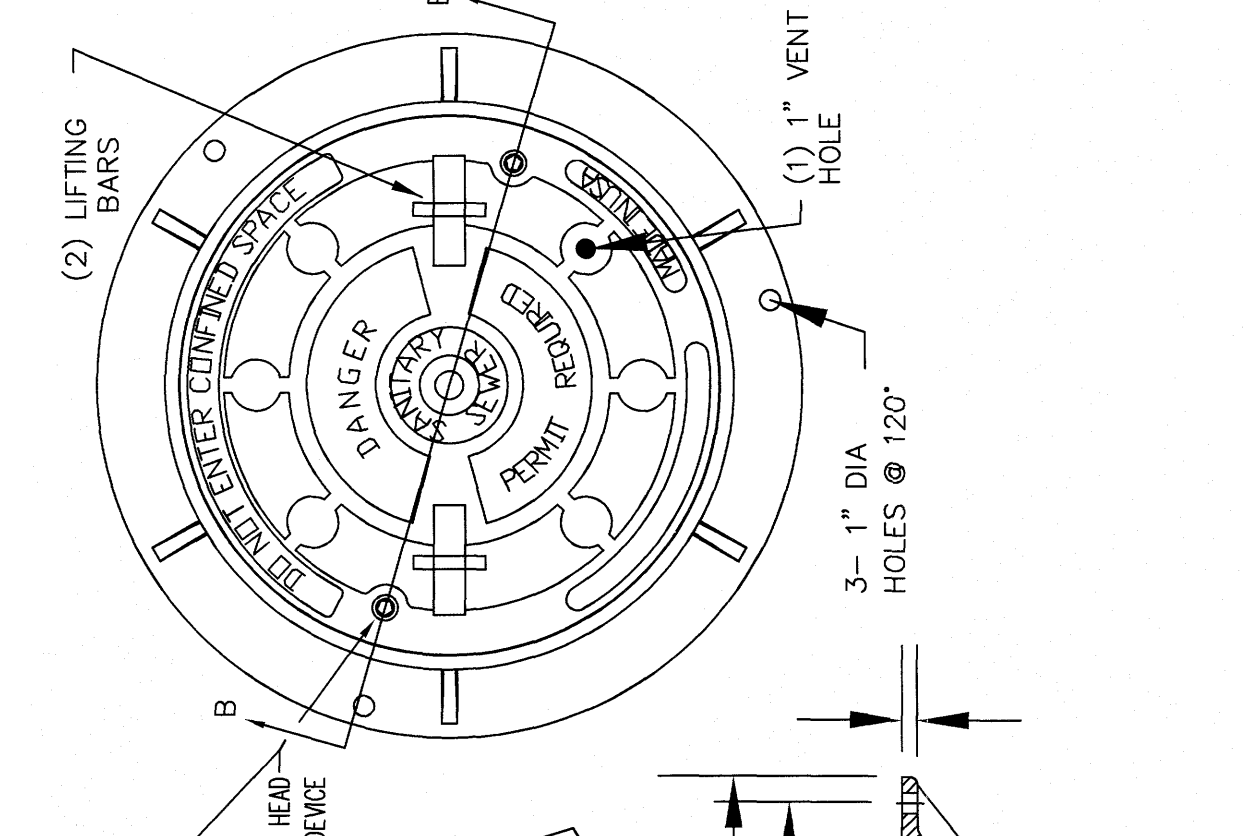


COVER 120 LBS. MINIMUM  
MANHOLE FRAME AND COVER

NOTES:  
1) ALL MANHOLE FRAMES SHALL BE DOMESTICALLY CAST.  
2) FRAME SHALL BE A MINIMUM WEIGHT OF 182 LBS. WITHIN PUBLIC ROW AND 160 LBS. WITHIN EASEMENTS.  
3) COVER SHALL WEIGH A MIN. OF 120 LBS.  
4) ALL MANHOLE FRAMES OUTSIDE OF PAVED SURFACES SHALL BE BOLTED TO THE CONE SECTION OR RING WITH A MINIMUM OF 4 BOLTS PER FRAME.

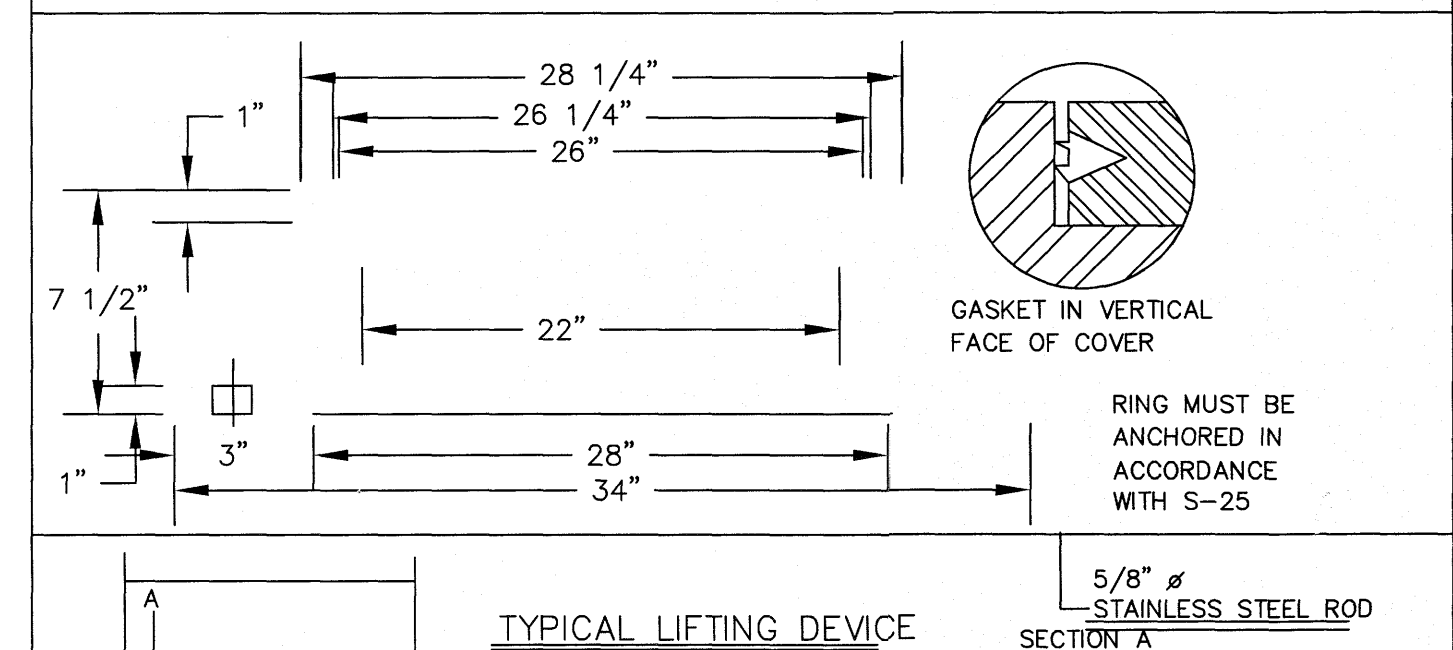
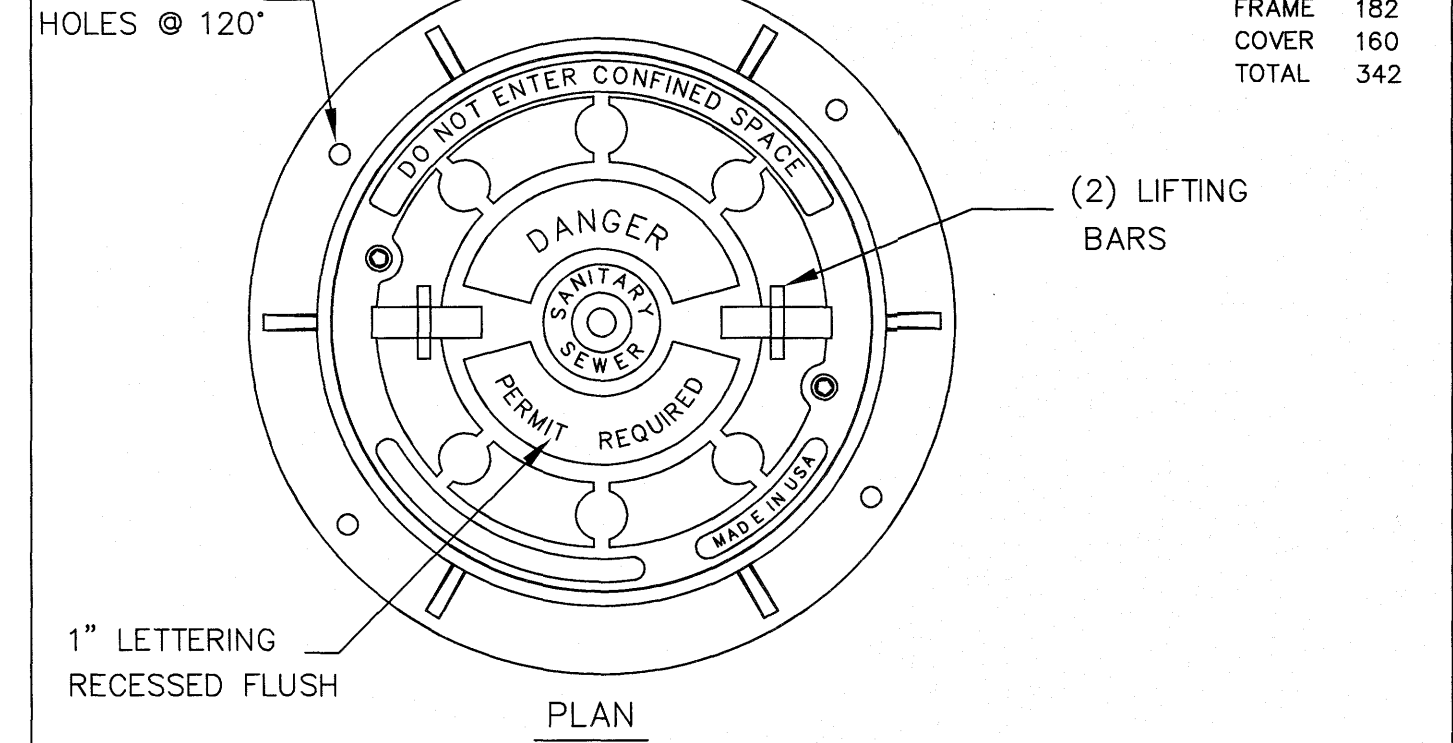
5/8"x3" LAGSHIELD IN HOLE DRILLED INTO CONE OR RING WITH ANCHOR SUNK TO DESIGN DEPTH. AND 3/8"x3" HOT DIPPED GALVANIZED LAG BOLT AND WASHER.

CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD MANHOLE COVER					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-25	3-1-87	3-1-87	A.B.B.	2-9-05	
	RRH	3-30-00	D.H.L.	6-18-08	

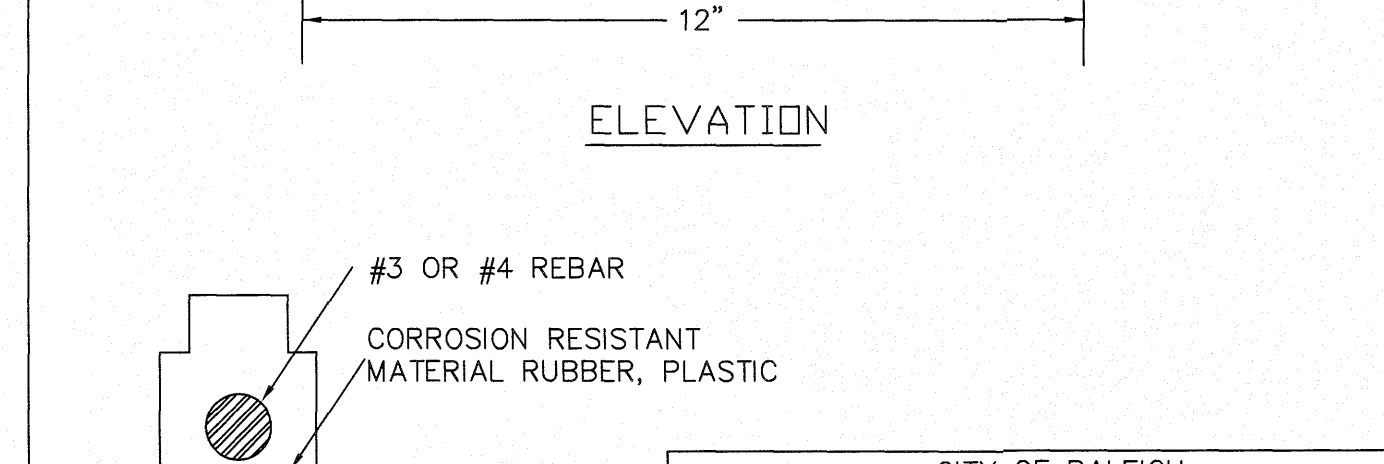
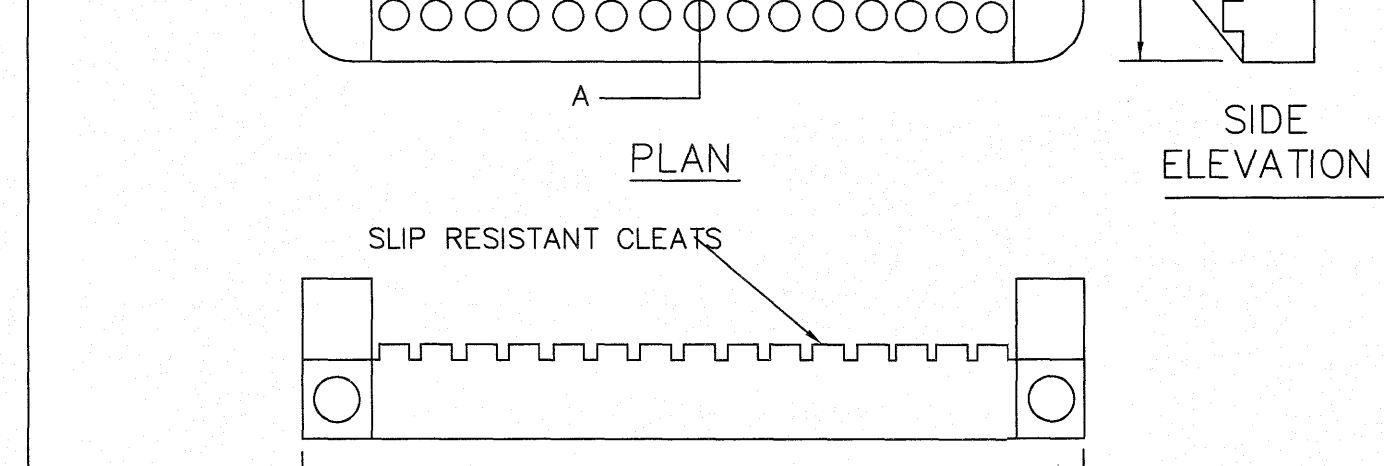
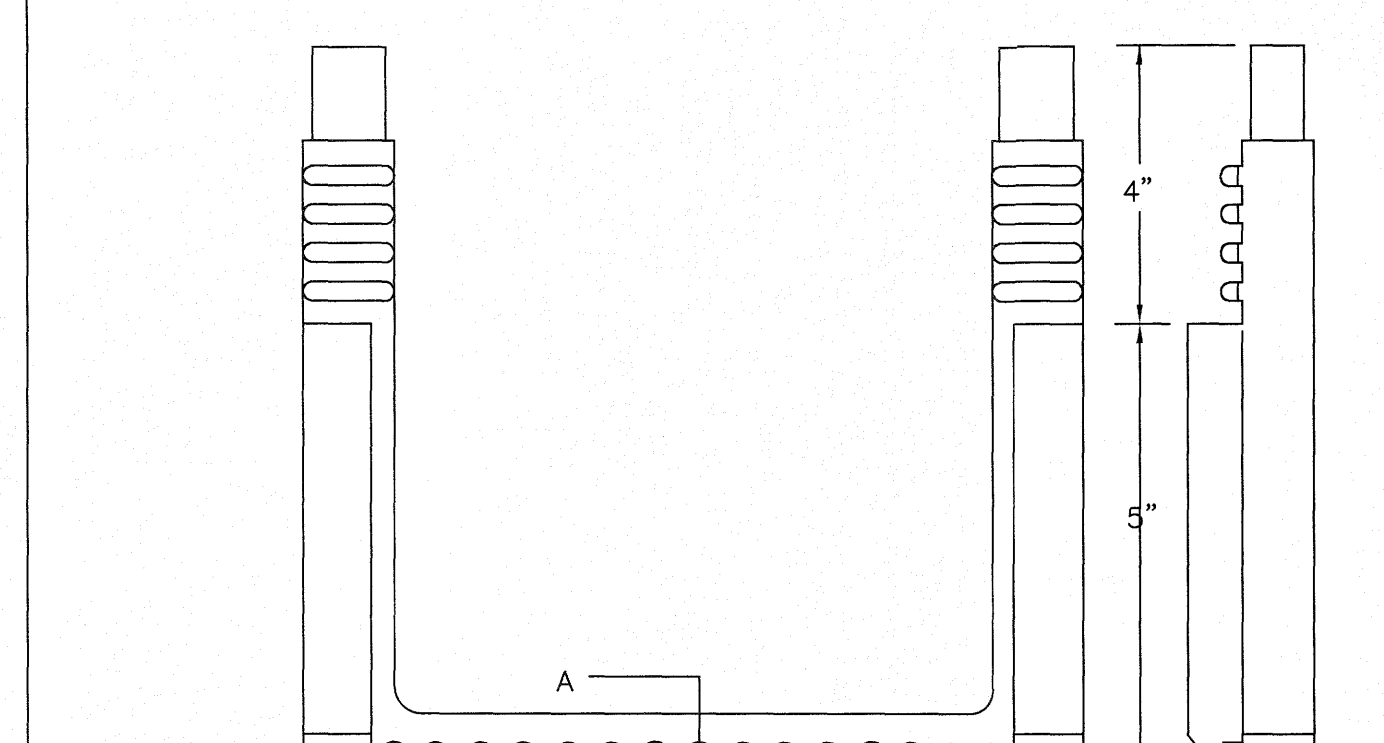


Note: solid cover required when water tight manhole specified.

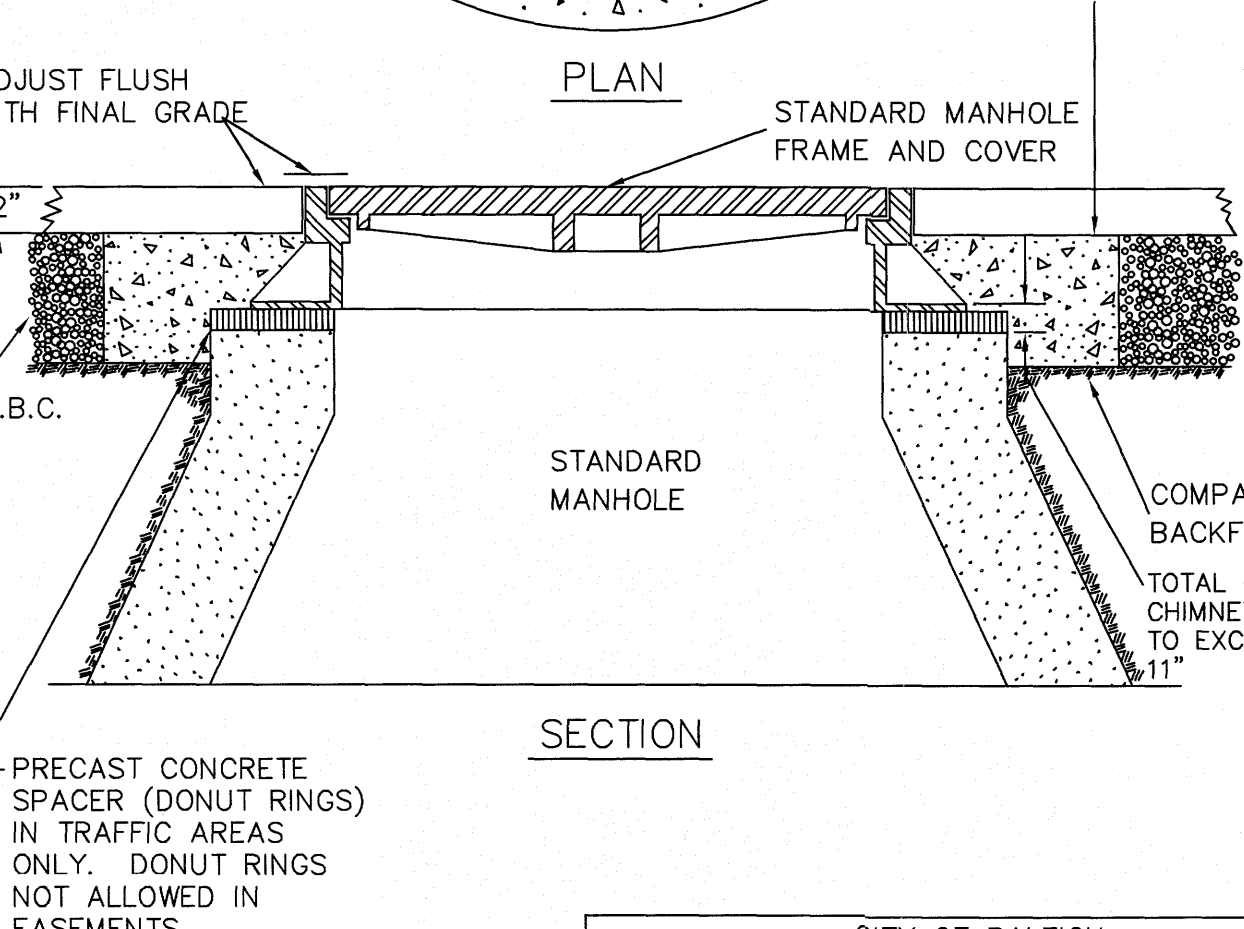
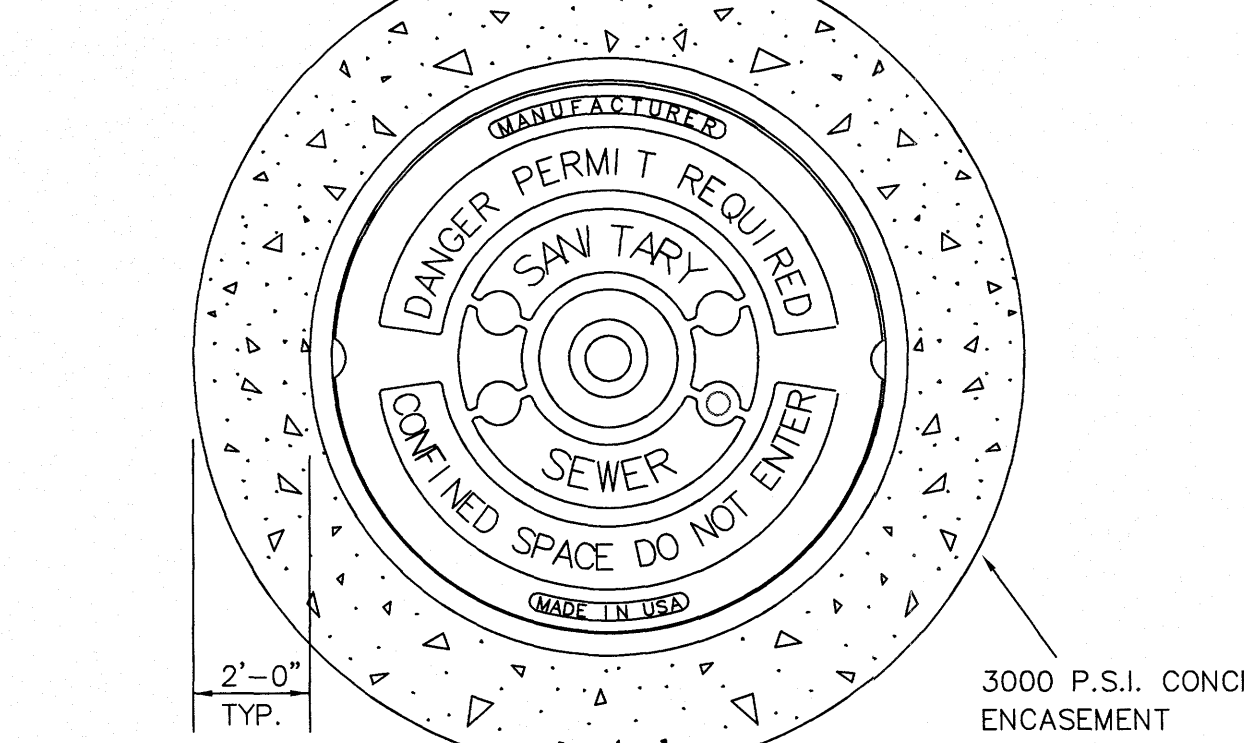
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES FLAT TOP MANHOLE COVER					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-25a	3-1-87	3-1-87	A.B.B.	2-9-05	
	RRH	3-30-00	D.H.L.	6-18-08	



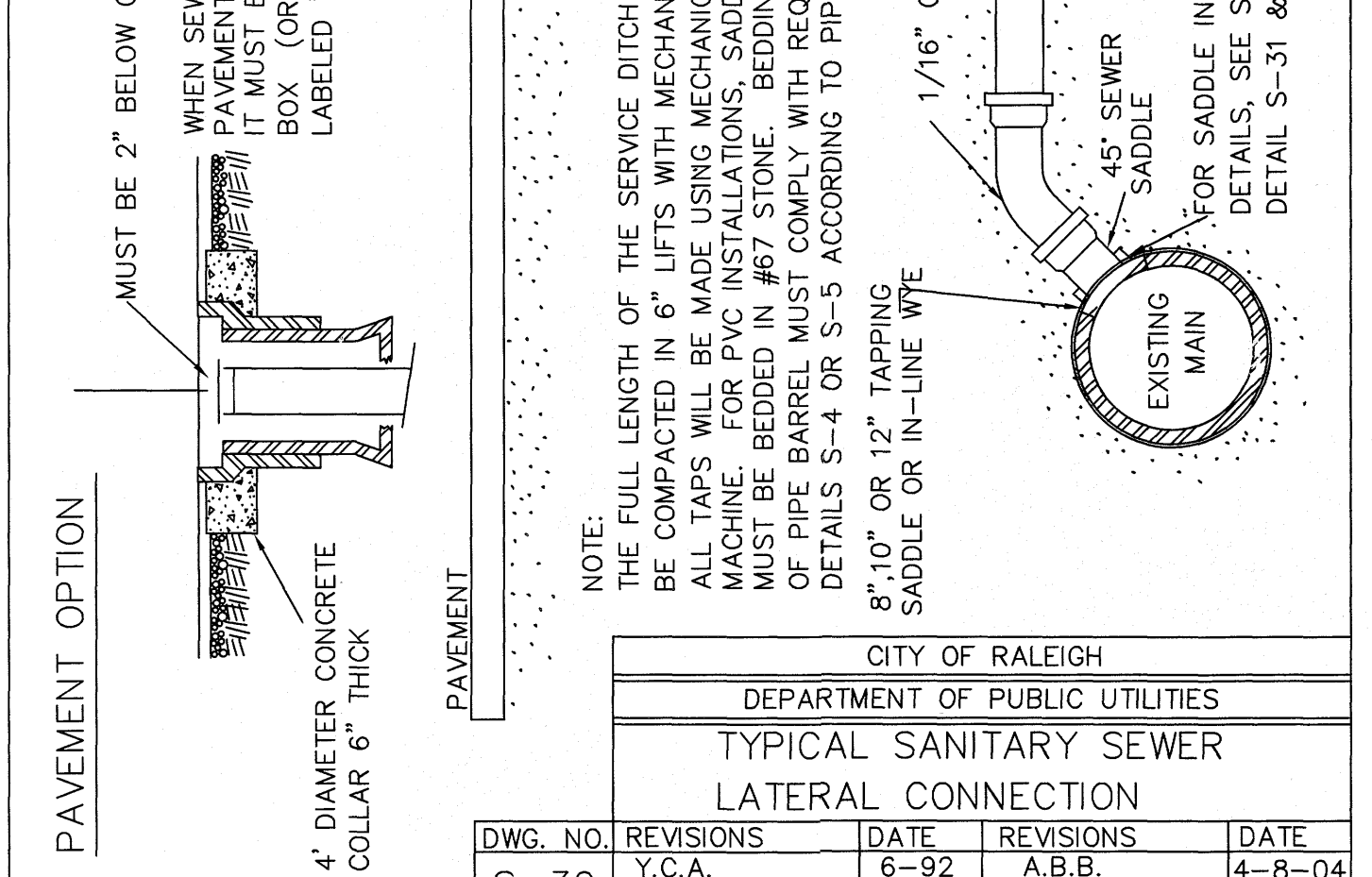
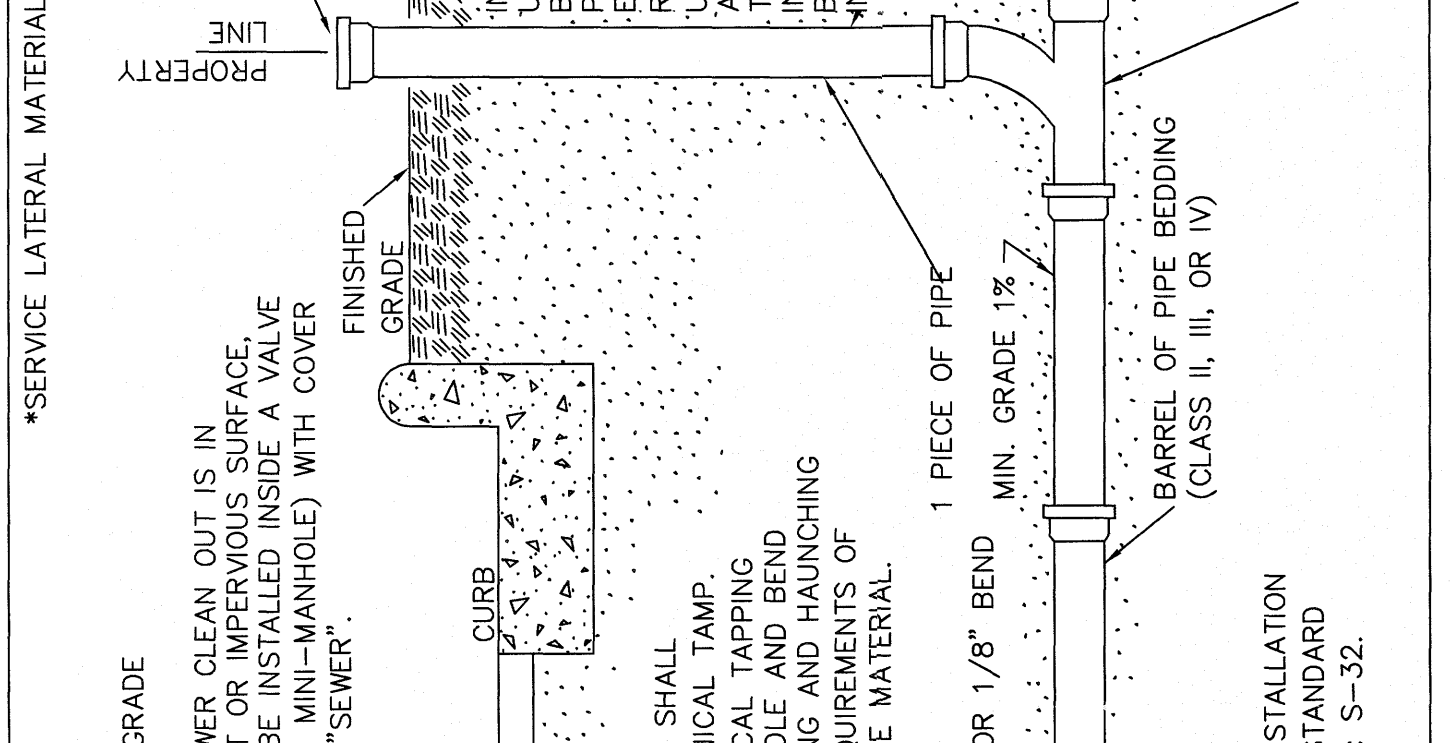
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES MANHOLE FRAME AND WATERTIGHT COVER					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-26	3-1-87	3-1-87	ABB	8-29-05	
	RRH	3-30-00	D.H.L.	6/18/08	



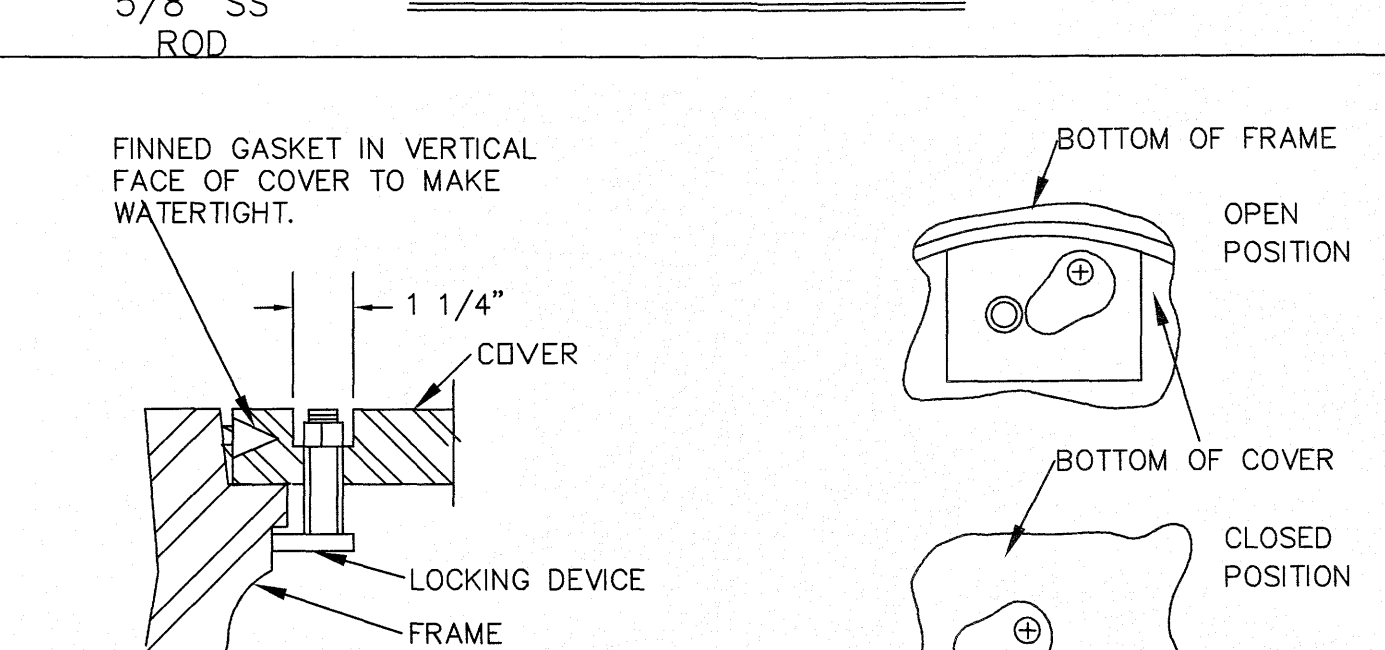
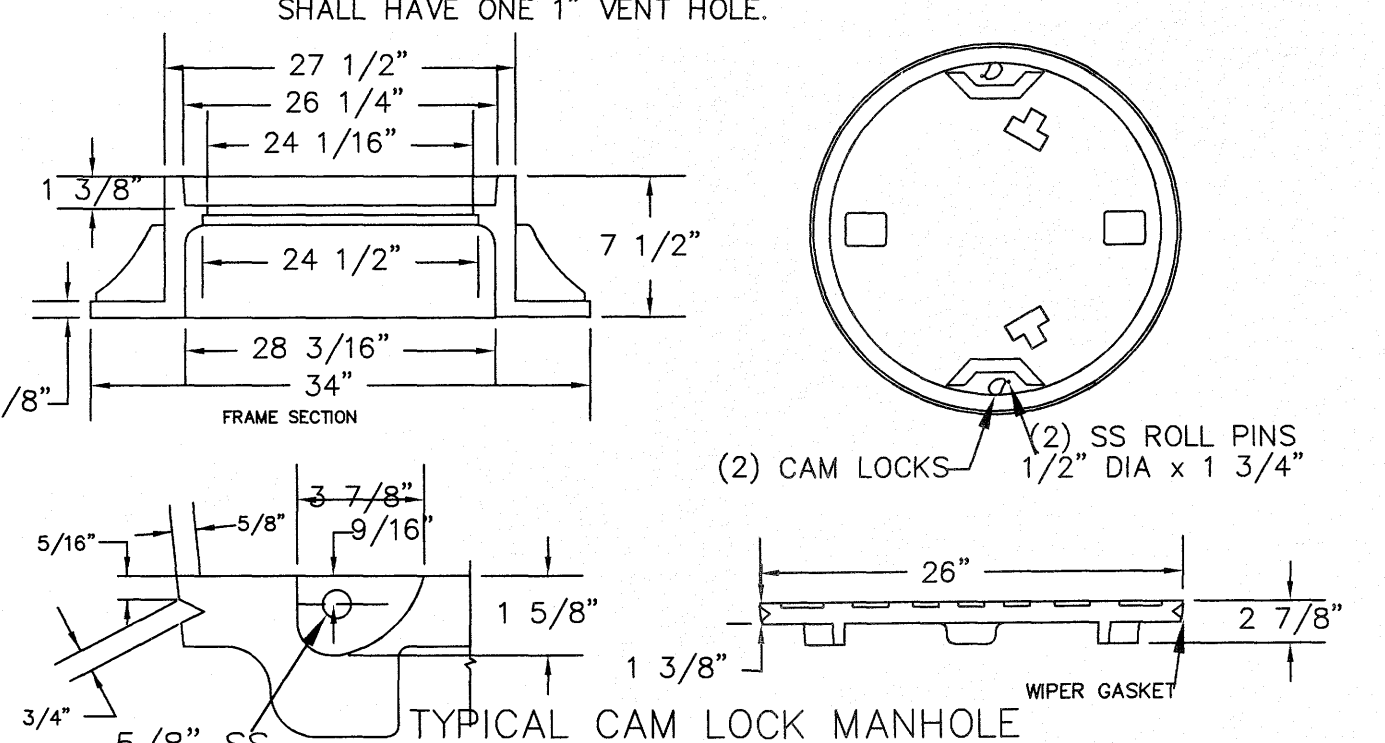
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD SLIP RESISTANT MANHOLE STEP DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-28	RRH	3-30-00			



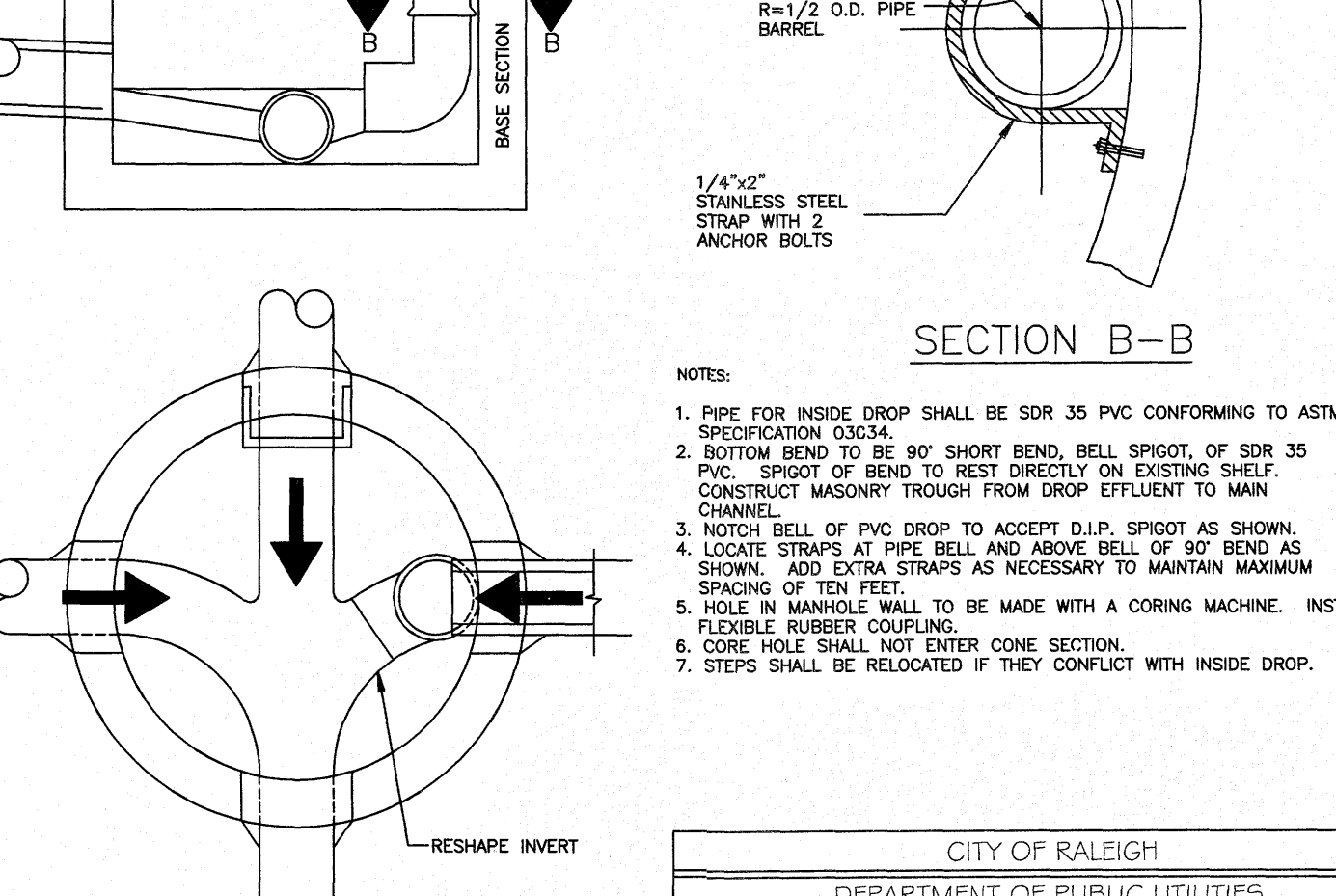
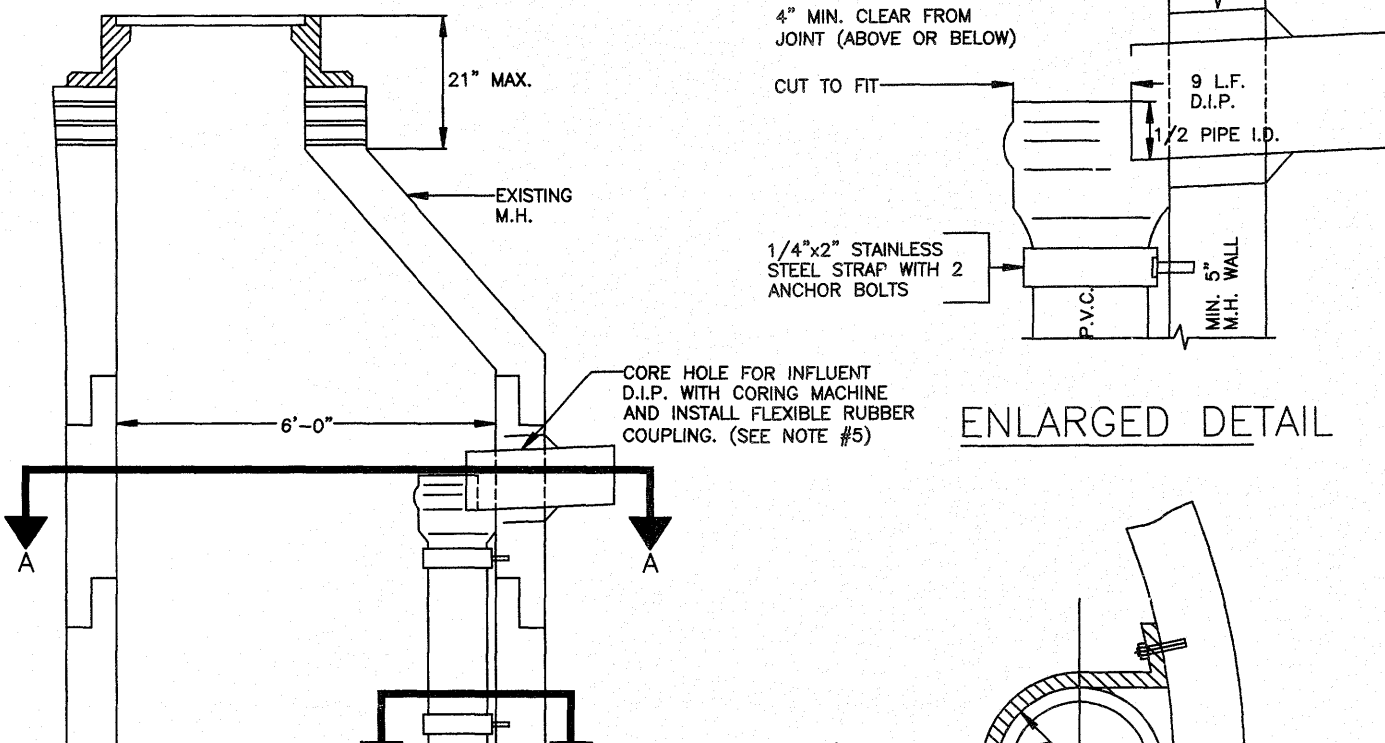
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD MANHOLE FRAME AND COVER DETAIL WITHIN PAVED SURFACES					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-29	Y.C.A.	12-31-91	ABB	9-20-04	
	RRH	3-30-00	DHL	11-29-07	



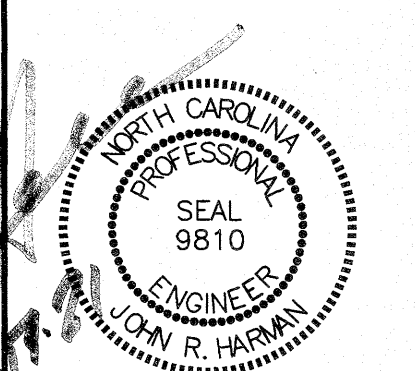
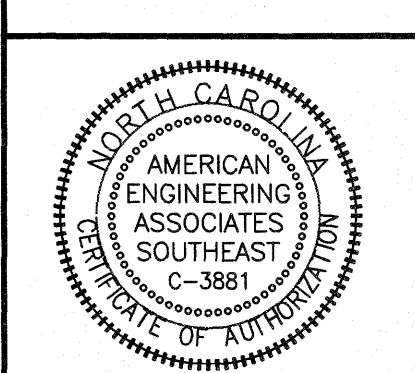
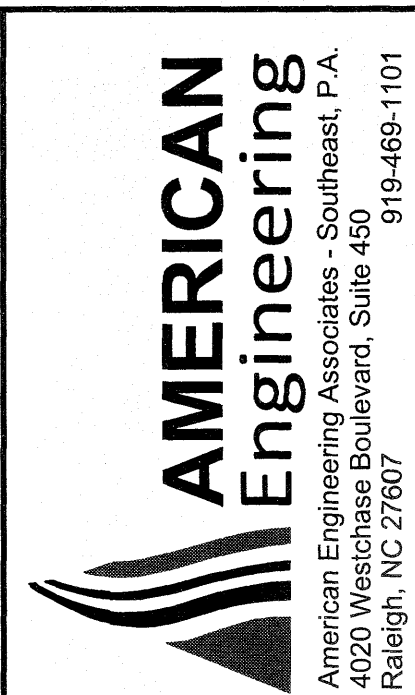
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TYPICAL SANITARY SEWER LATERAL CONNECTION					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-30	Y.C.A.	6-92	A.B.B.	4-8-04	
	RRH	3-30-00	D.H.L.	6-18-08	



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES WATER-TIGHT MANHOLE FRAME WITH CAM LOCK COVER					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-27	RRH	5-30-00			
	DHL	6-18-08			



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES INSIDE DROP MANHOLE					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-53	MAB	11-6-13			



CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES STANDARD SLIP RESISTANT MANHOLE STEP DETAIL					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-28	RRH	3-30-00			

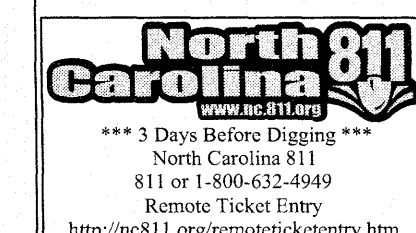
CITY OF RALEIGH DEPARTMENT OF PUBLIC UTILITIES TYPICAL SANITARY SEWER LATERAL CONNECTION					
DWG. NO.	REVISIONS	DATE	REVISIONS	DATE	
S-30	Y.C.A.	6-92	A.B.B.	4-8-04	
	RRH	3-30-00	D.H.L.	6-18-08	

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KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

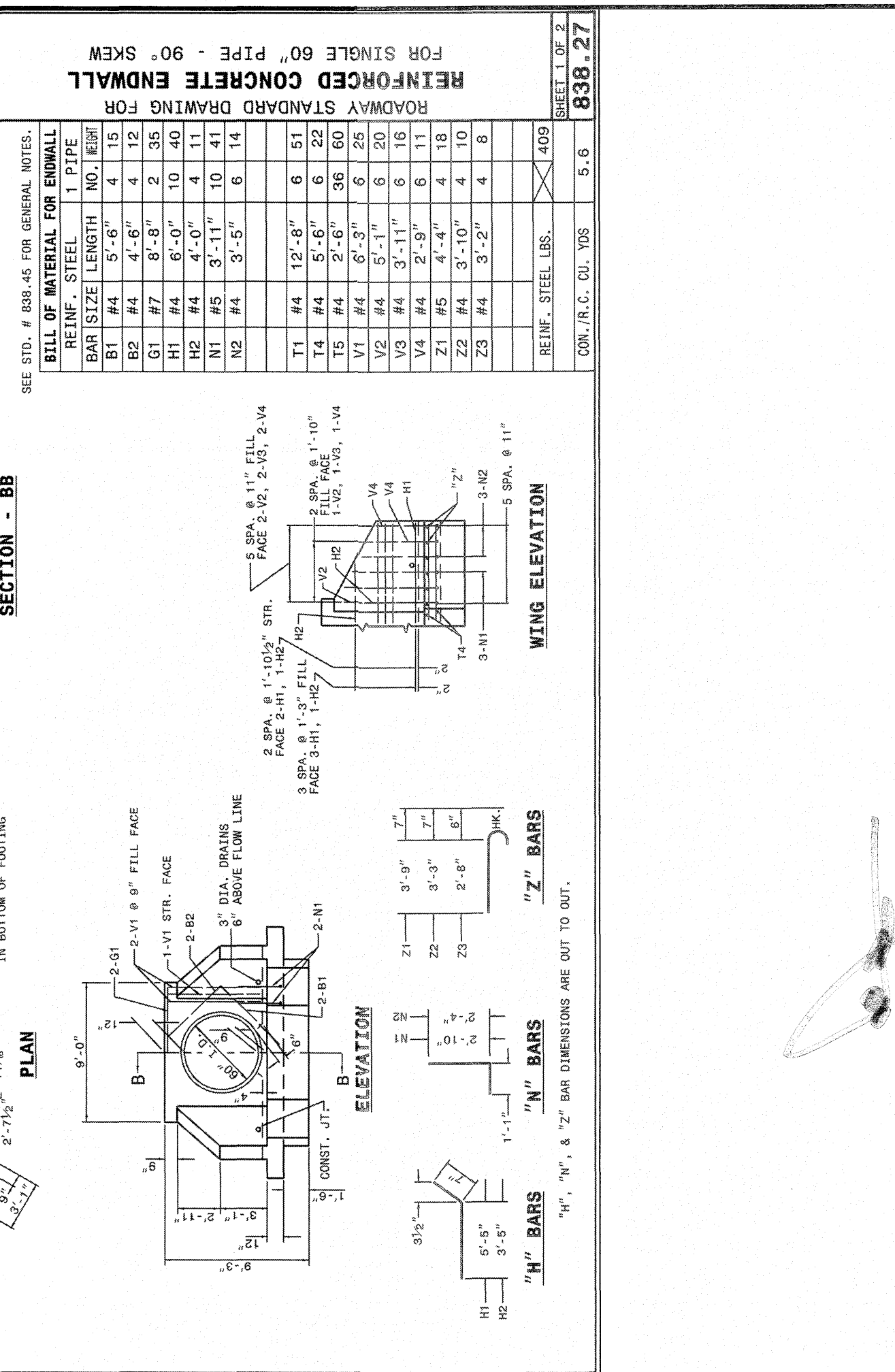
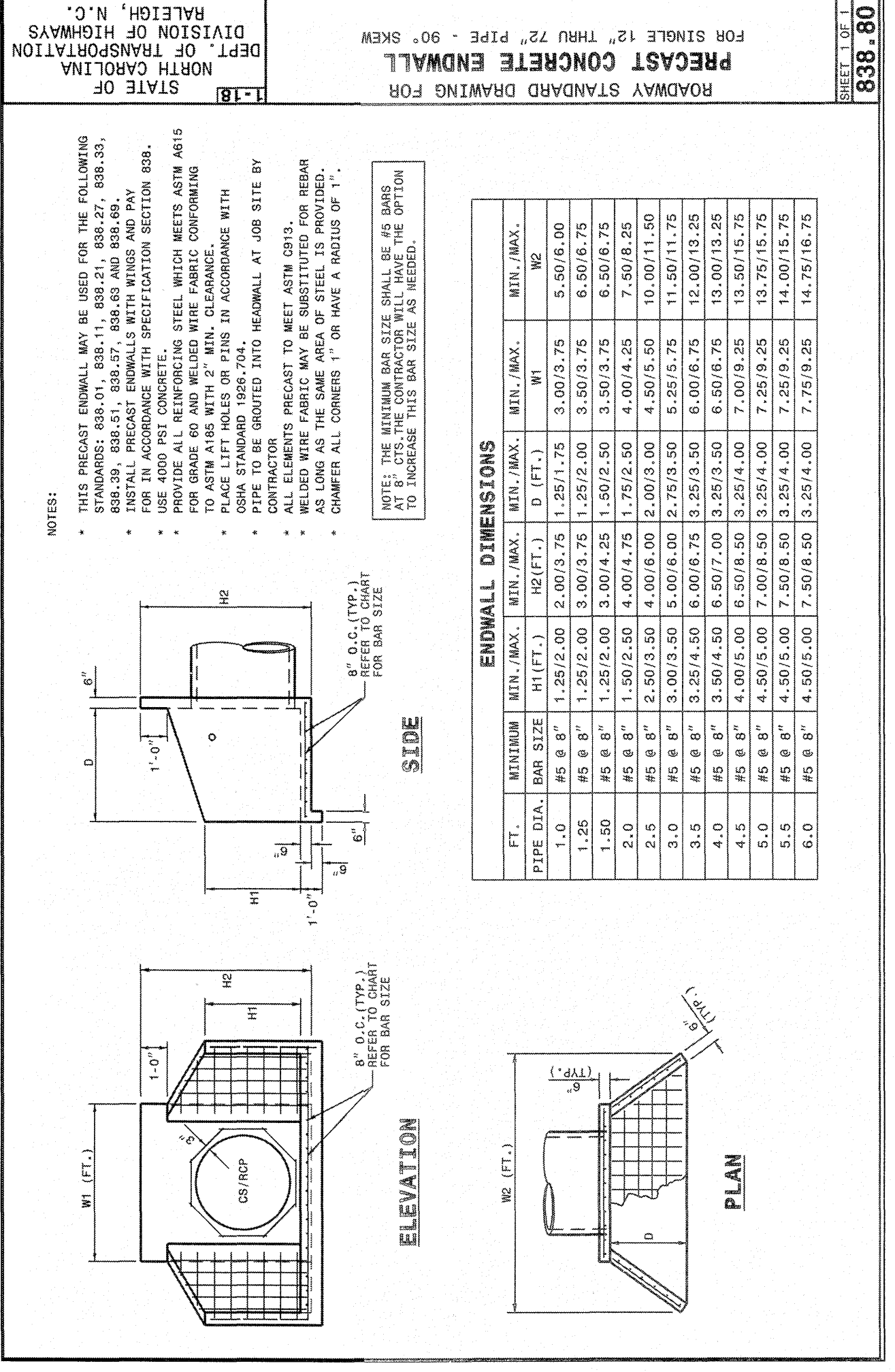
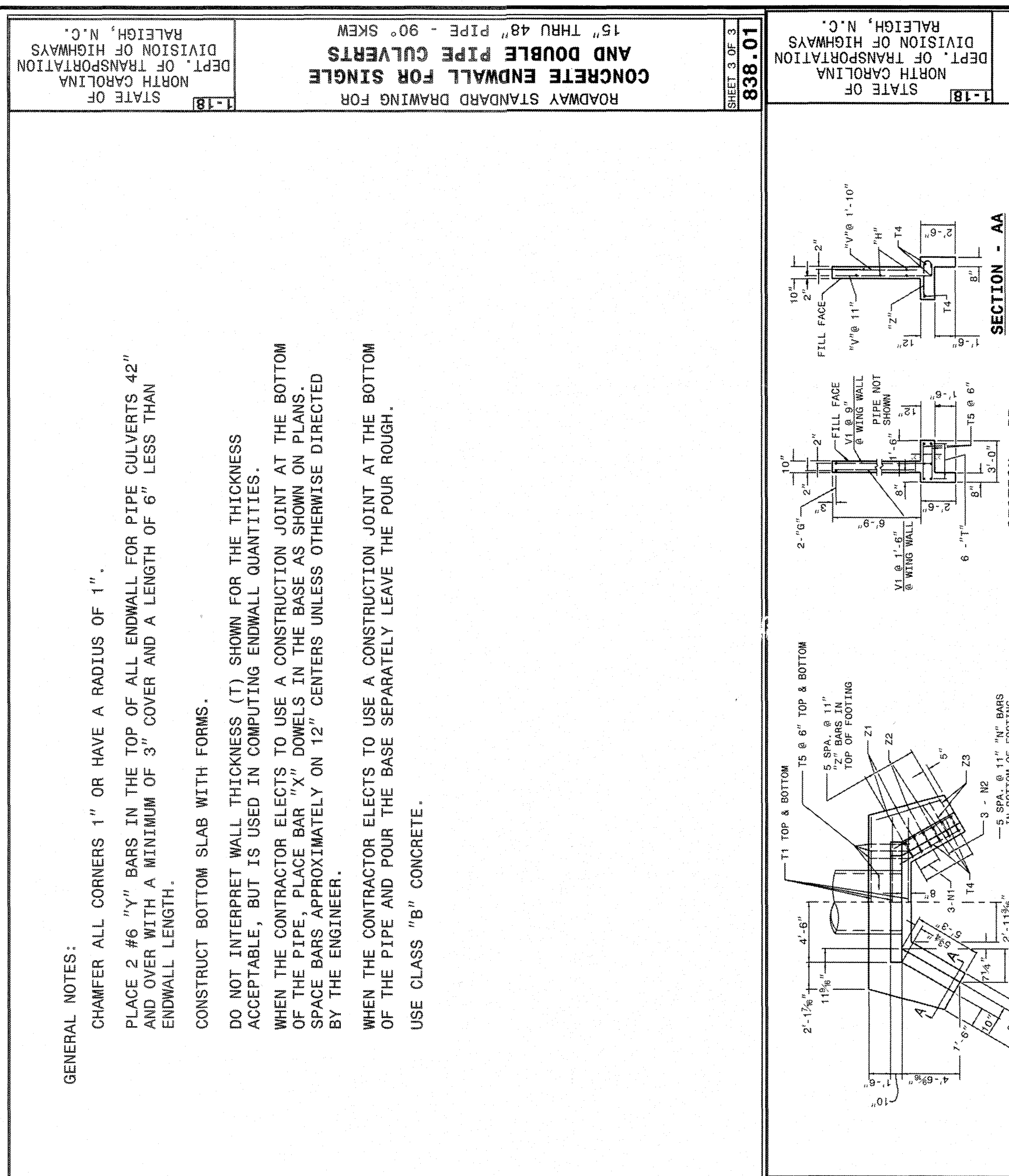
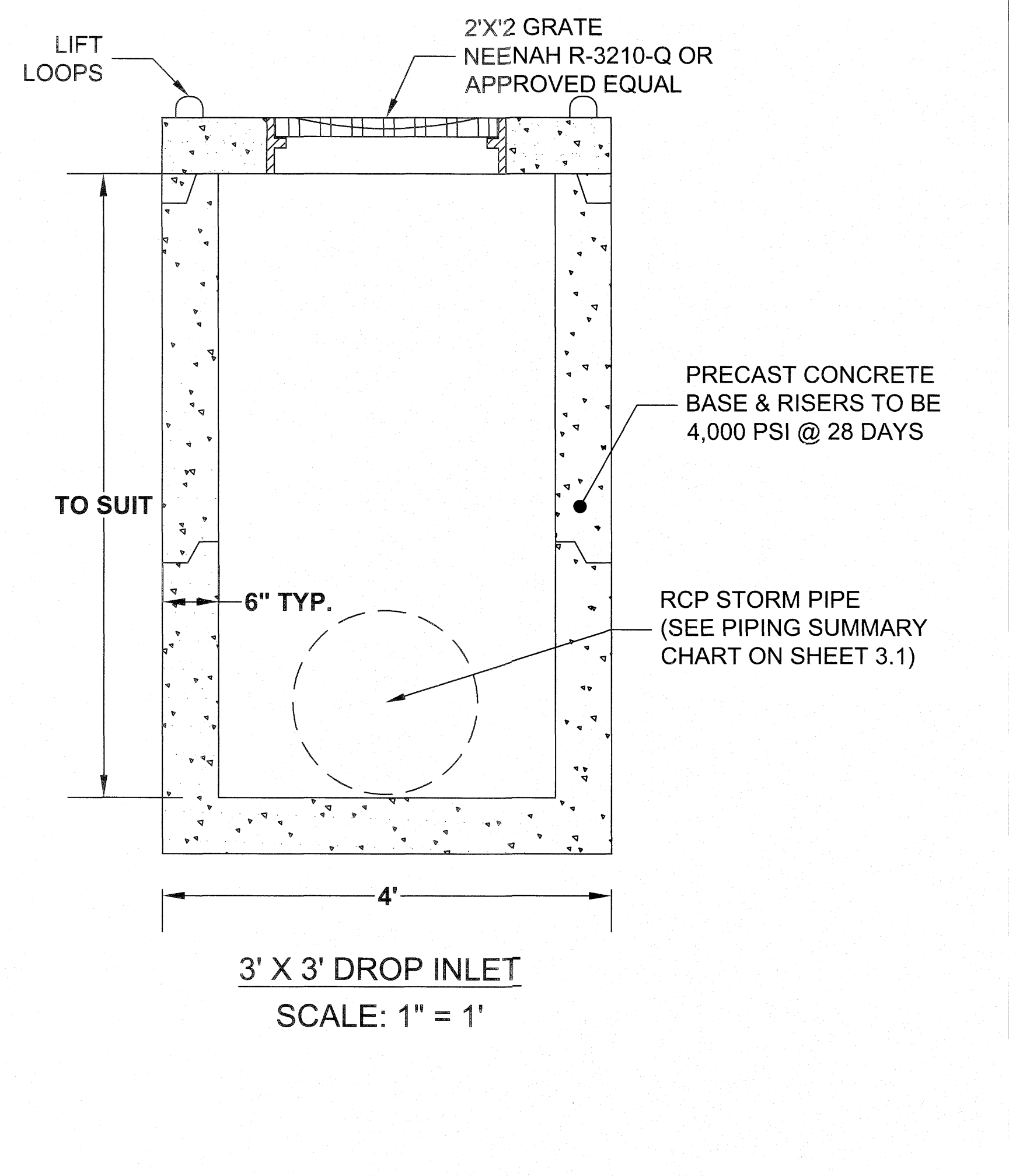
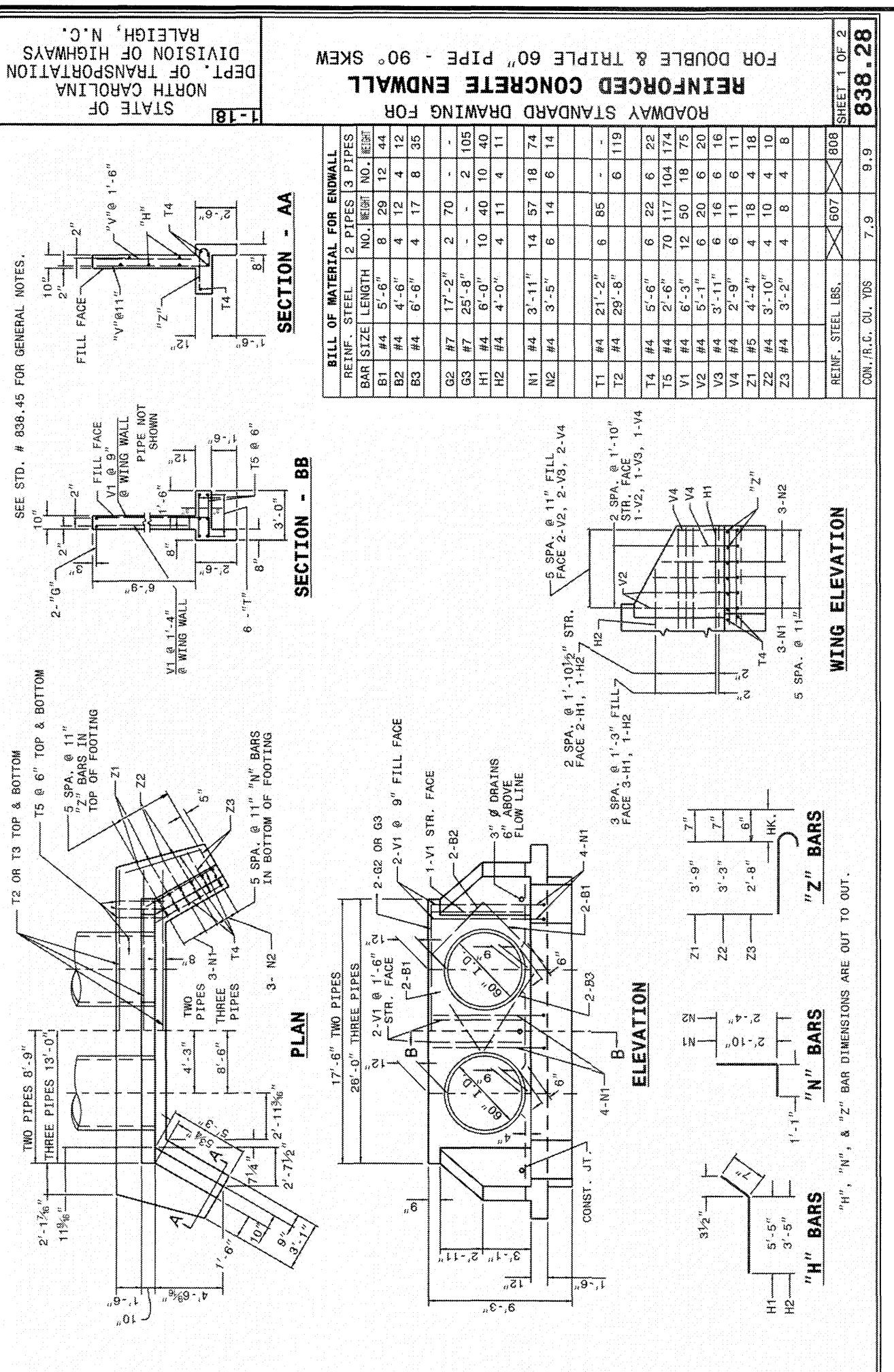
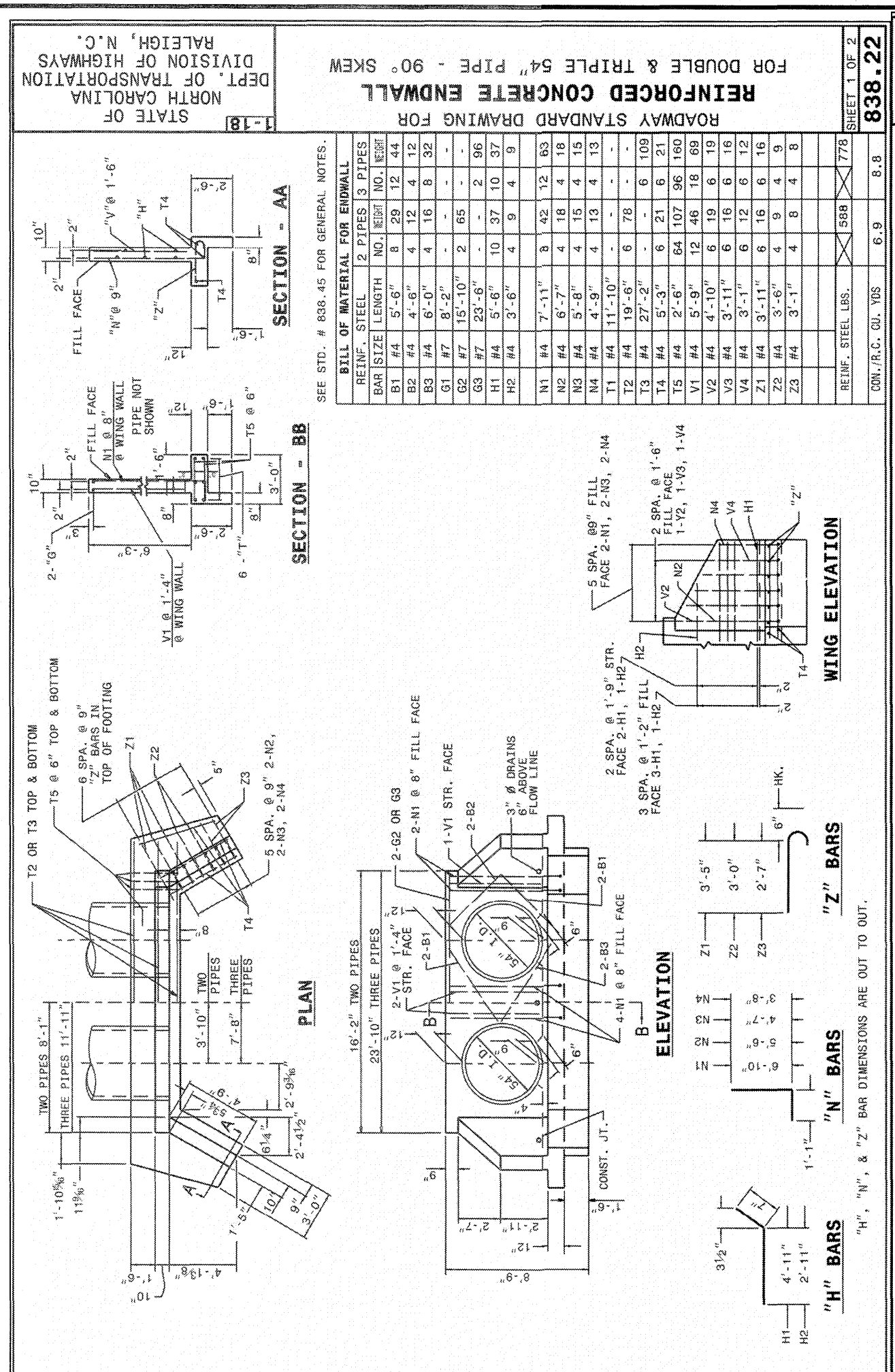
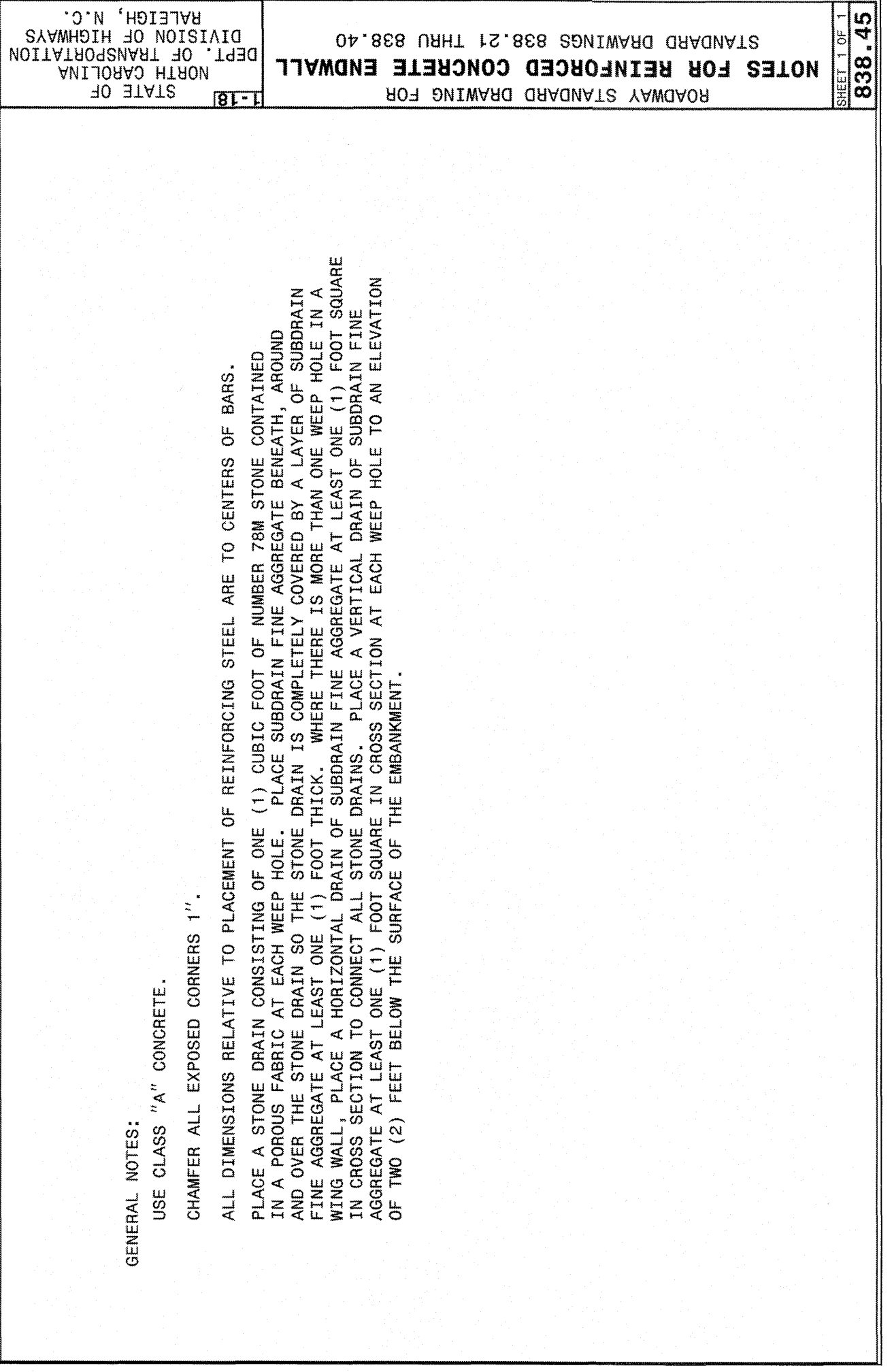
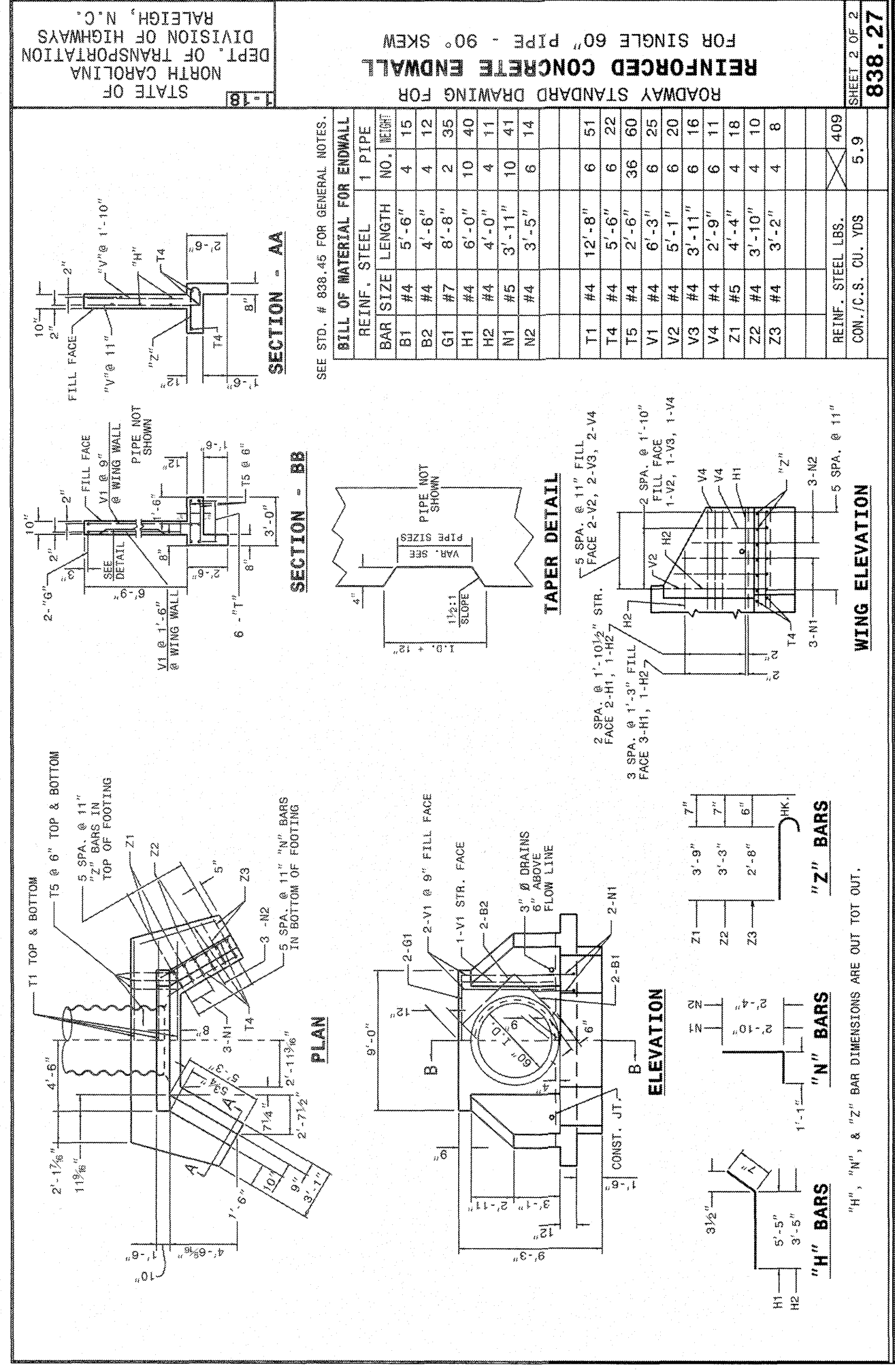
JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
KALAS FALLS CIVIL DETAILS

SHEET NO.:  
CD11



CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION  
Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below. The City will retain a copy of the approved plans. Any work authorized by this approval must proceed in accordance with the plans text on file with the City. This electronic approval may not be edited once issued. Any modification to this approval once issued will invalidate this approval.  
City of Raleigh Development Approval  
Raleigh Water Review Officer





GENERAL NOTES:  
 CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".  
 PLACE 2 #6 "N" BARS IN THE TOP OF ALL ENDWALL FOR PIPE CULVERTS 42" AND OVER WITH A MINIMUM OF 3" COVER AND A LENGTH OF 6" LESS THAN ENDWALL LENGTH.  
 CONSTRUCT BOTTOM SLAB WITH FORMS.  
 DO NOT INTERPRET WALL THICKNESS (T) SHOWN FOR THE THICKNESS ACCEPTABLE, BUT IS USED IN COMPUTING ENDWALL QUANTITIES.  
 WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE, PLACE BAR "X" DOMELS IN THE BASE AS SHOWN ON PLANS. SPACE BARS APPROXIMATELY ON 12" CENTERS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.  
 WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE AND POUR THE BASE SEPARATELY LEAVE THE POUR ROUGH.  
 USE CLASS "B" CONCRETE.

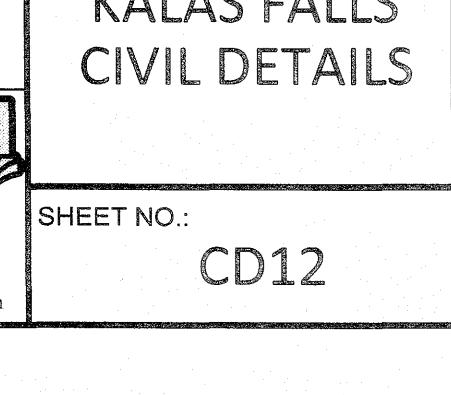
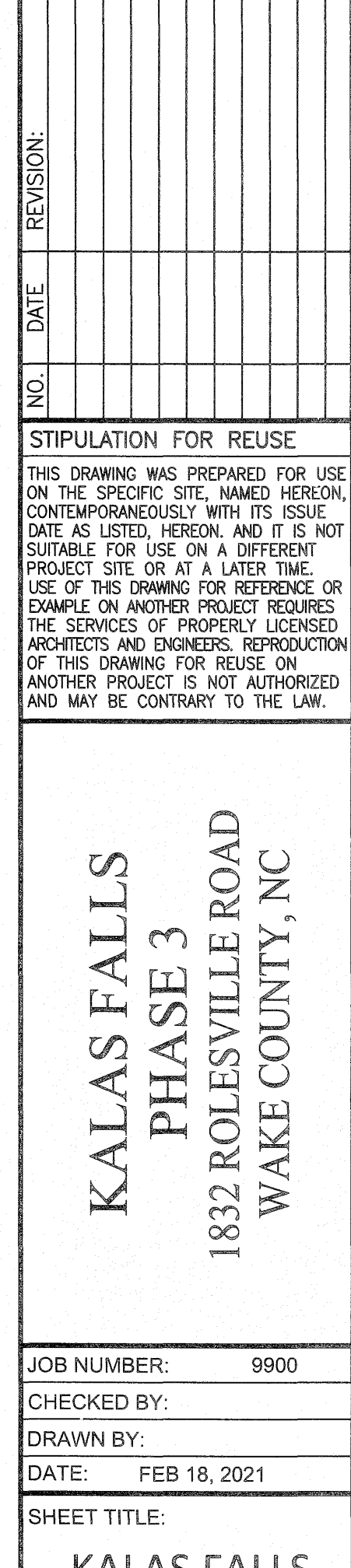
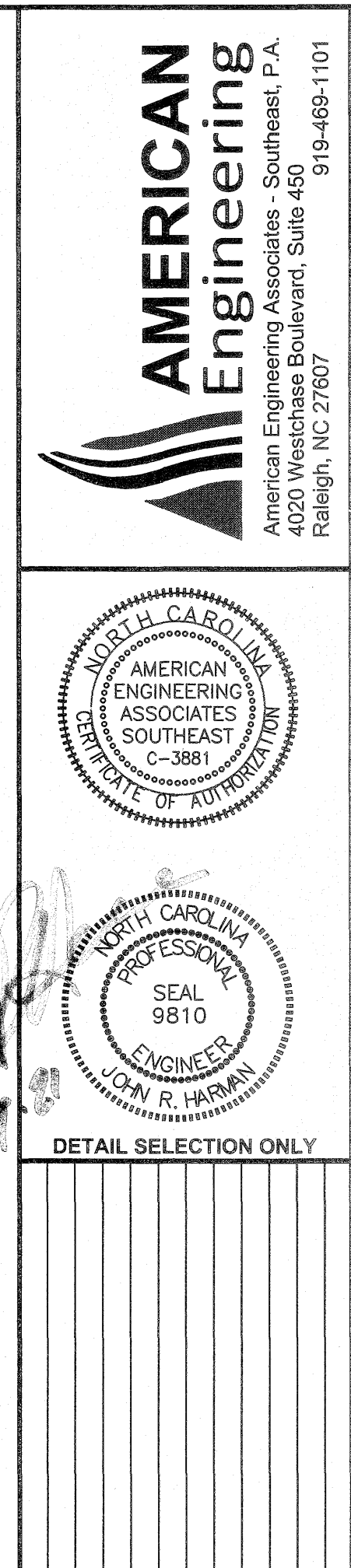
GENERAL NOTES:  
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 WHEN THE CONTRACTOR ELECTS TO USE A CONSTRUCTION JOINT AT THE BOTTOM OF THE PIPE AND POUR THE BASE SEPARATELY LEAVE THE POUR ROUGH.  
 USE CLASS "B" CONCRETE.

KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

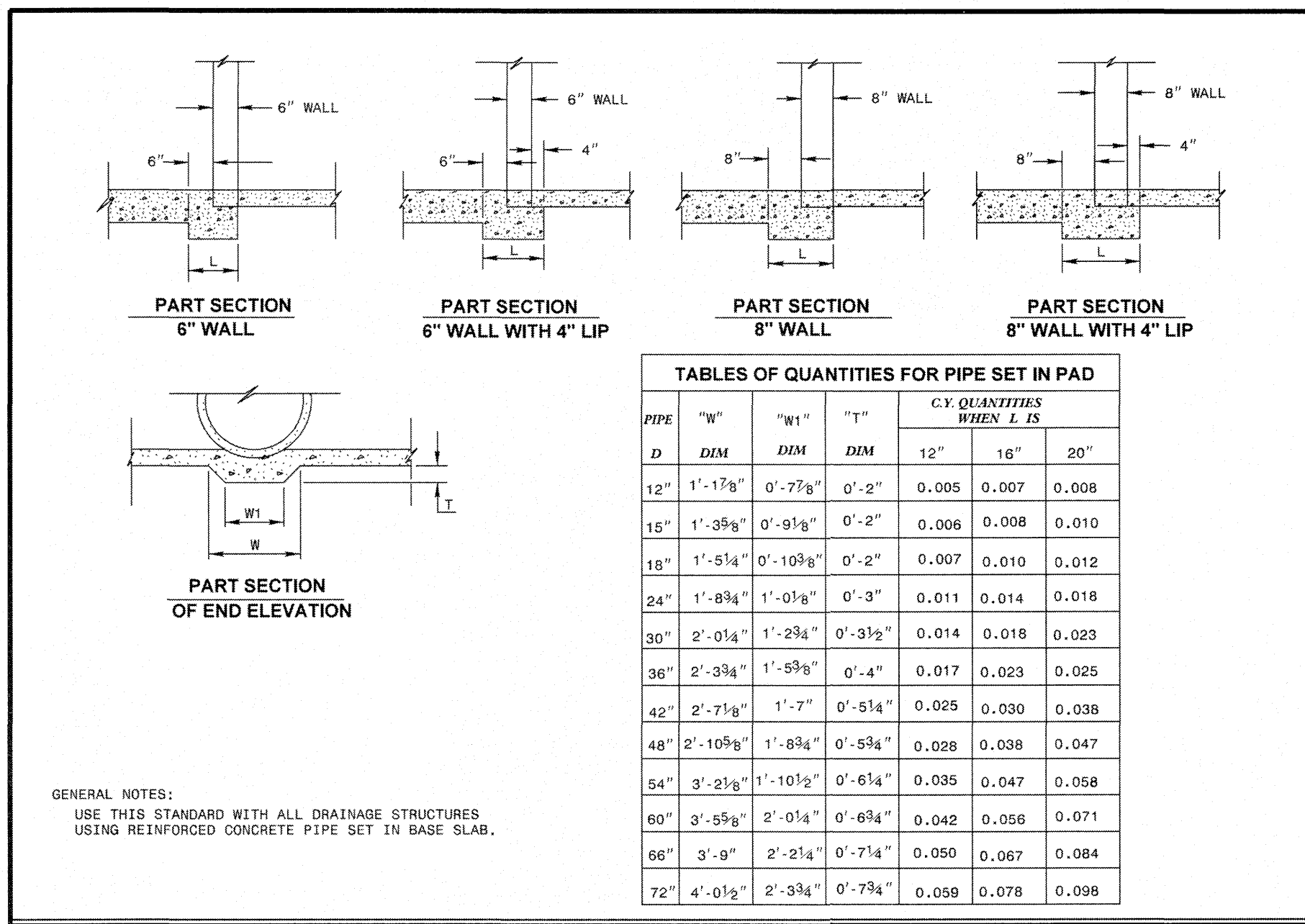
JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021

SHEET TITLE:  
 KALAS FALLS CIVIL DETAILS

SHEET NO.:  
 CD12



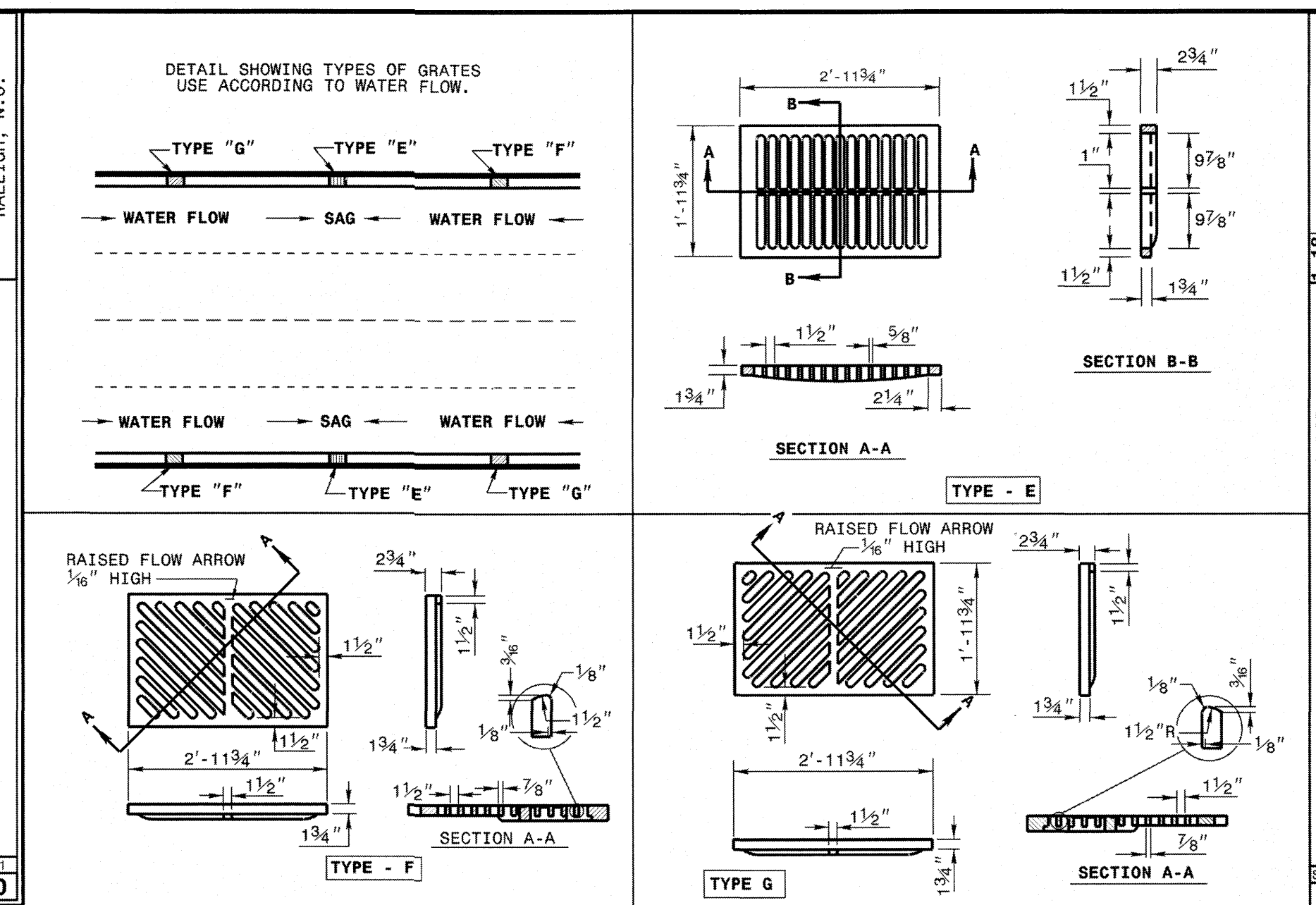




STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE BASE PAD FOR DRAINAGE STRUCTURES

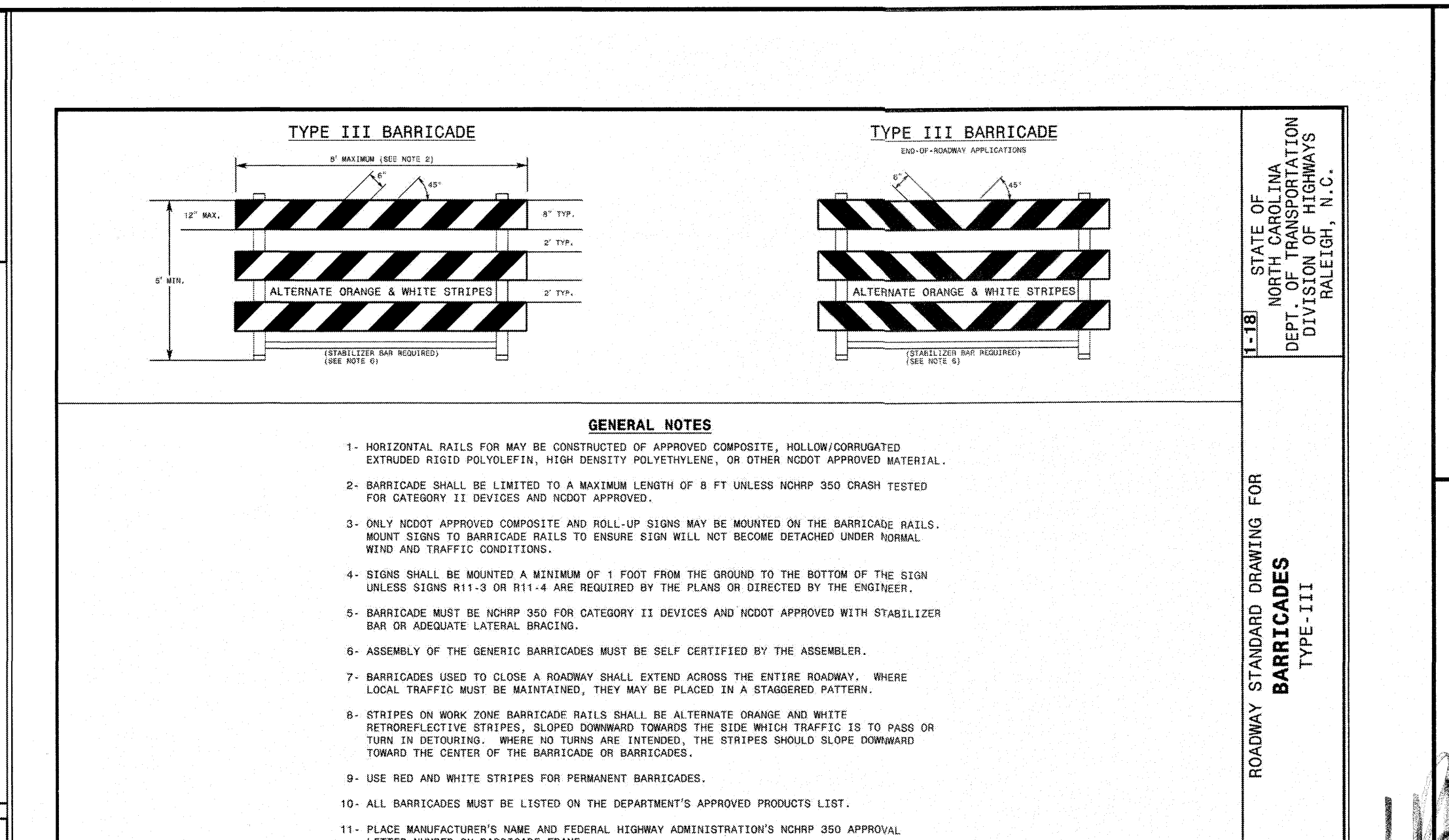
SHEET 1 OF 2  
**840.00**



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

SHEET 2 OF 2  
**840.03**



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

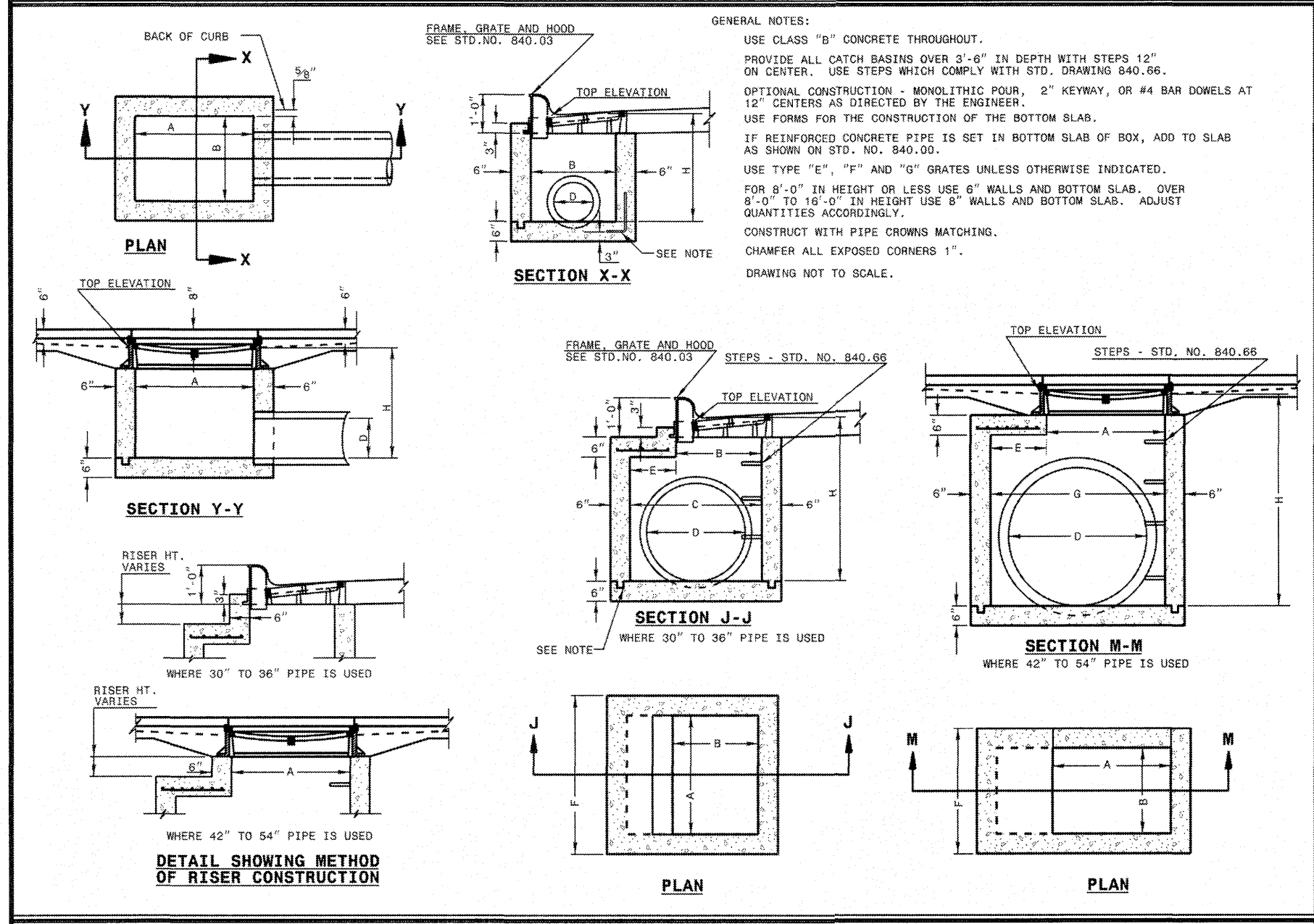
ROADWAY STANDARD DRAWING FOR BARRICADES TYPE III

SHEET 1 OF 2  
**1145.01**

AMERICAN Engineering Associates, Southeast, P.A.  
4020 Westgate Boulevard, Suite 450  
Raleigh, NC 27607

AMERICAN ENGINEERING ASSOCIATES SOUTHEAST PROFESSIONAL ENGINEER SEAL 9810

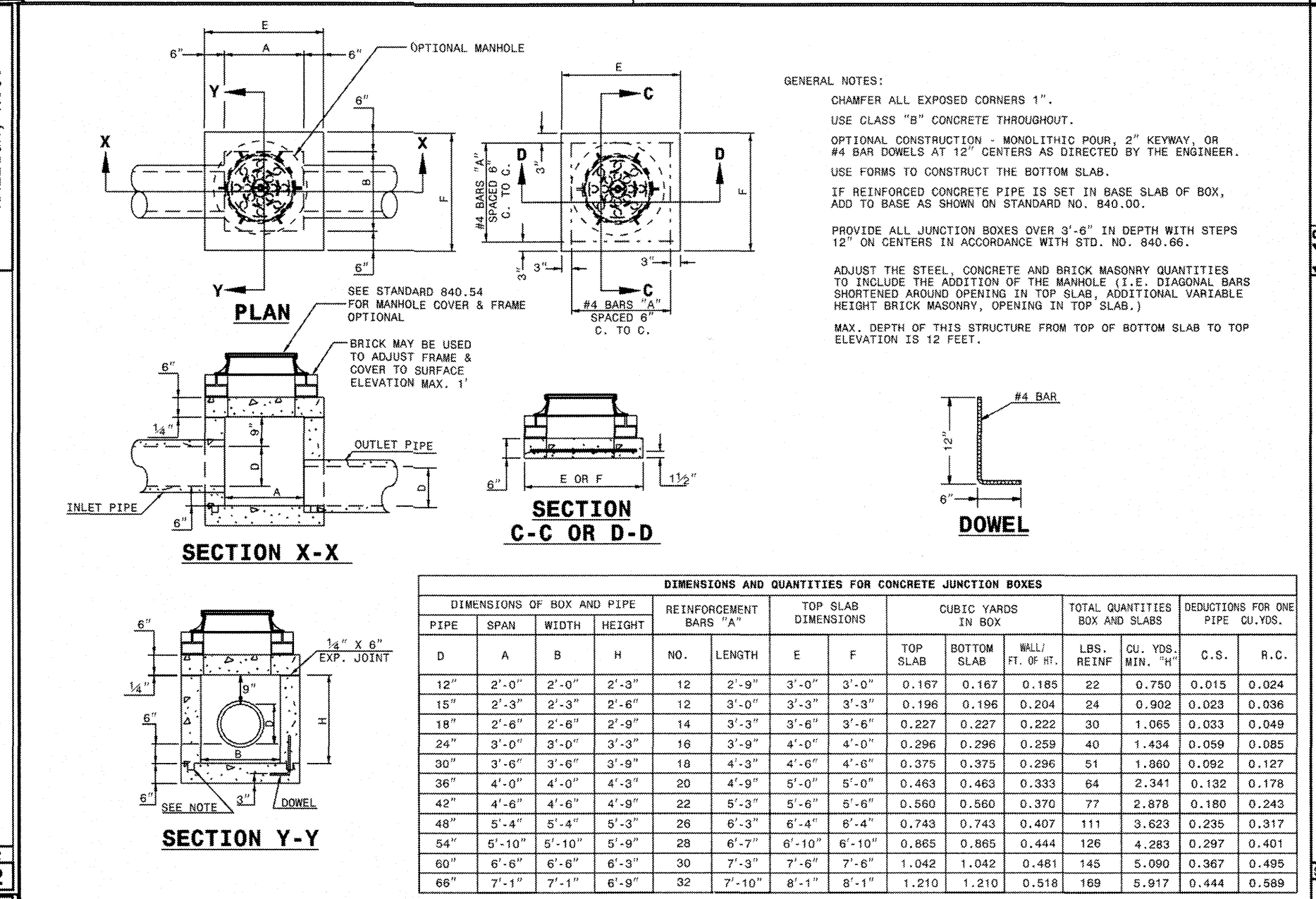
DETAIL SELECTION ONLY



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

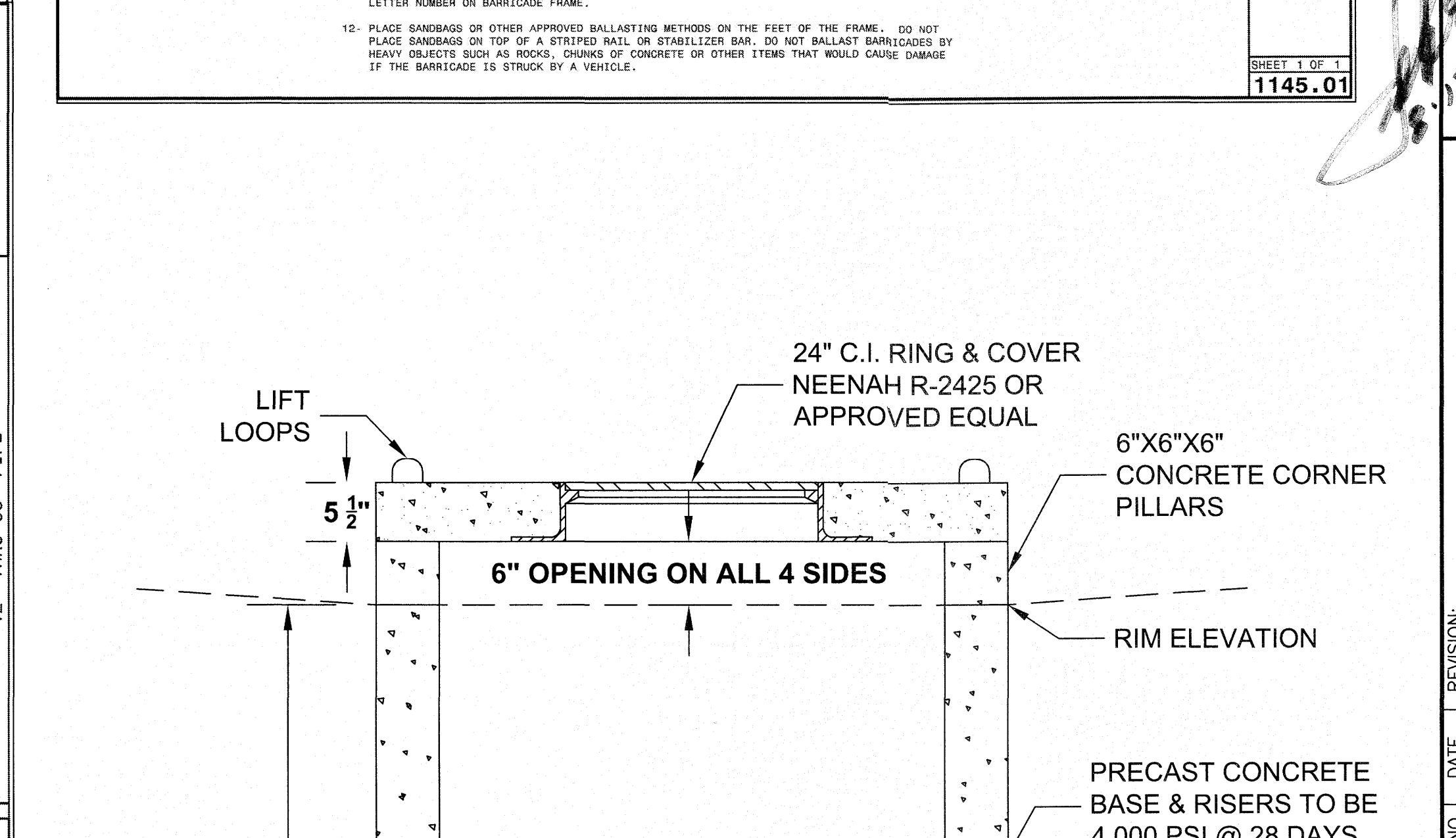
SHEET 1 OF 2  
**840.02**



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE JUNCTION BOX (WITH OPTIONAL MANHOLE) 12" THRU 66" PIPE

SHEET 1 OF 1  
**840.31**



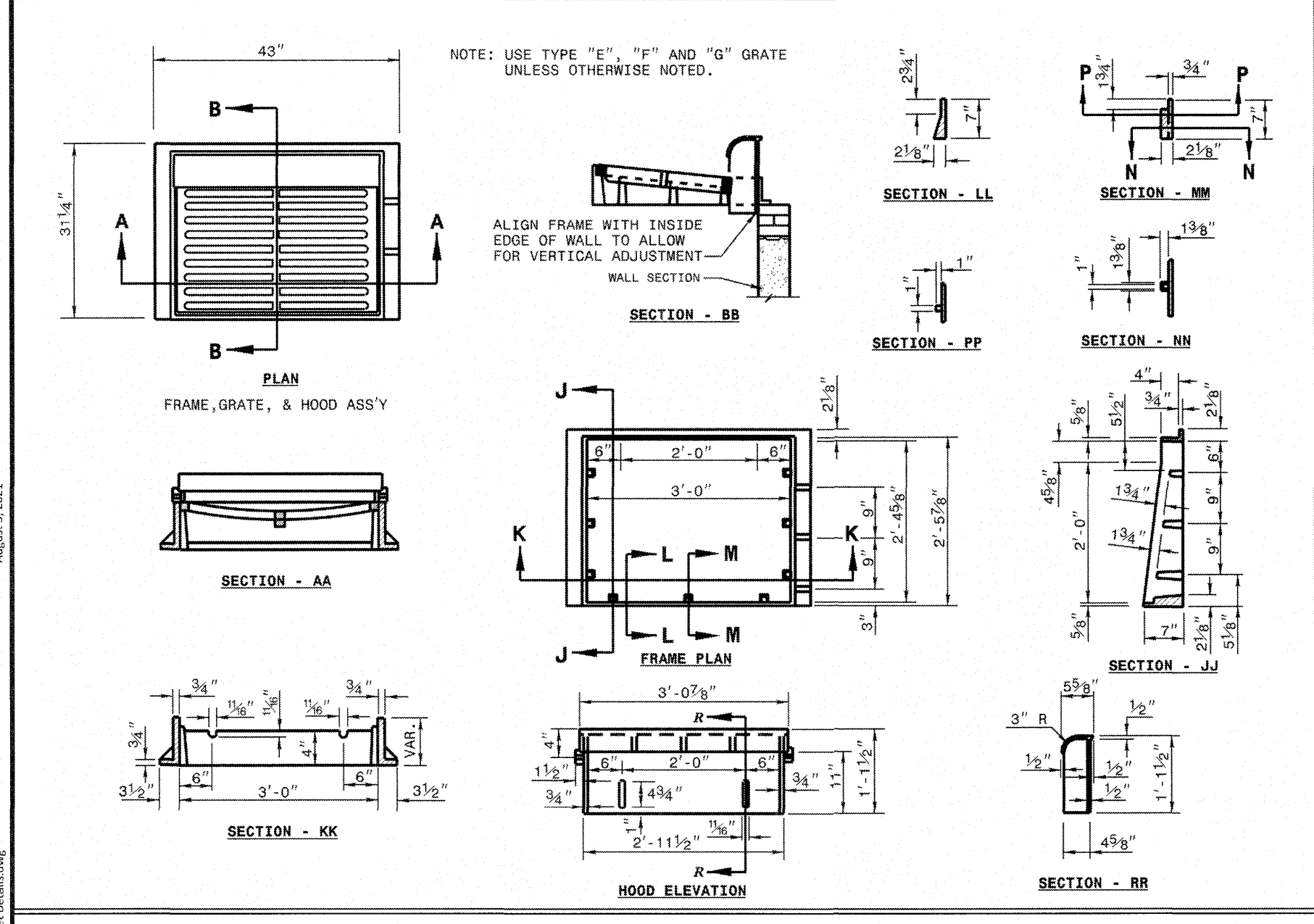
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

SHEET 2 OF 2  
**840.02**

STIPULATION FOR REUSE

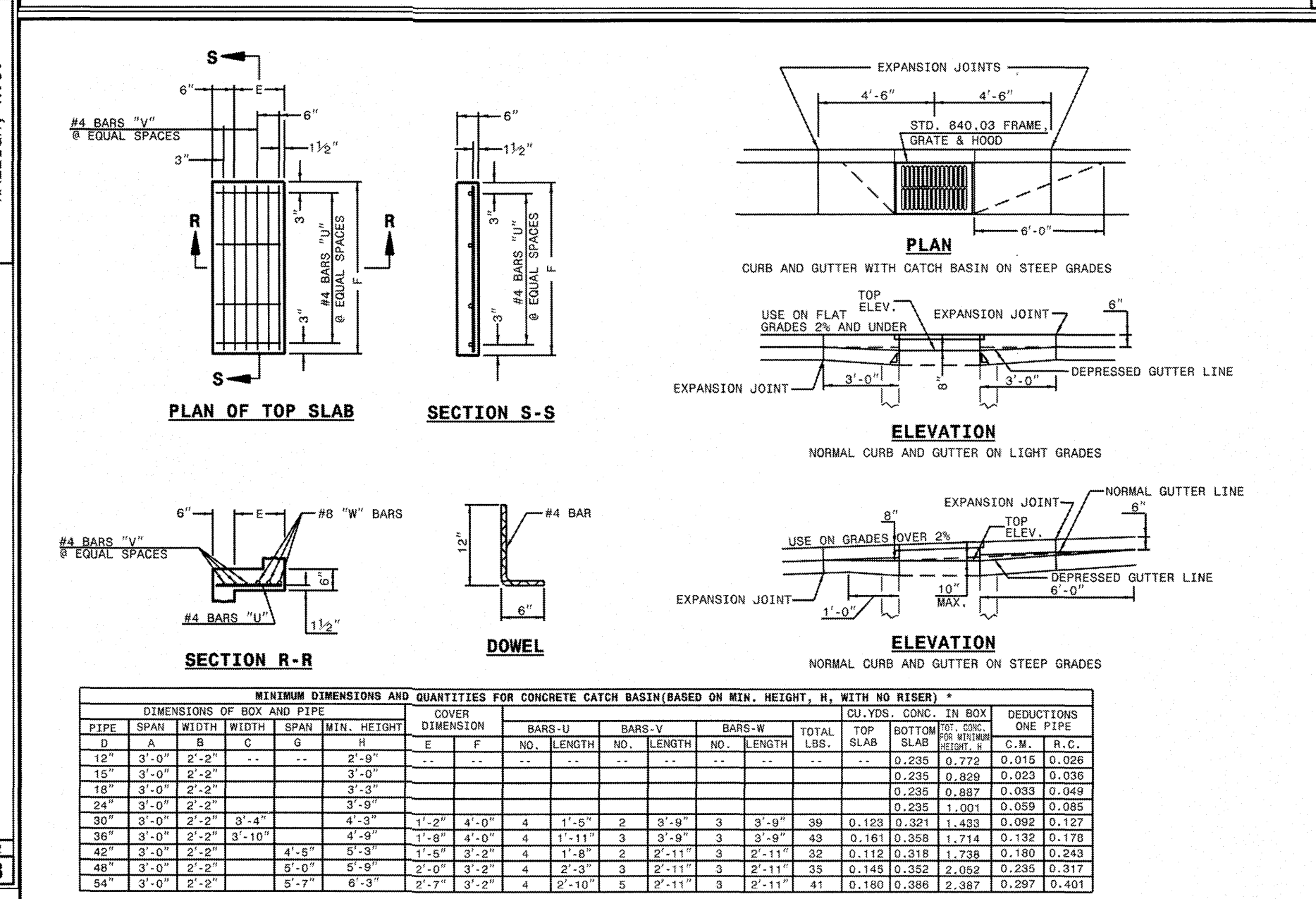
THIS DRAWING WAS PREPARED FOR USE ON THE SPECIFIC SITE, NAMED HEREON, CONTEMPORANEOUSLY WITH ITS ISSUE DATE AS LISTED, HEREON, AND IT IS NOT SUITABLE FOR USE ON A DIFFERENT PROJECT SITE OR AT A LATER TIME. USE OF THIS DRAWING FOR REFERENCE OR EXAMPLE ON ANOTHER PROJECT REQUIRES THE SERVICES OF PROPERLY LICENSED ARCHITECTS AND ENGINEERS. REPRODUCTION OF THIS DRAWING FOR REUSE ON ANOTHER PROJECT IS NOT AUTHORIZED AND MAY BE CONTRARY TO THE LAW.



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR FRAME, GRATES, AND HOOD FOR USE ON STANDARD CATCH BASIN

SHEET 1 OF 2  
**840.03**

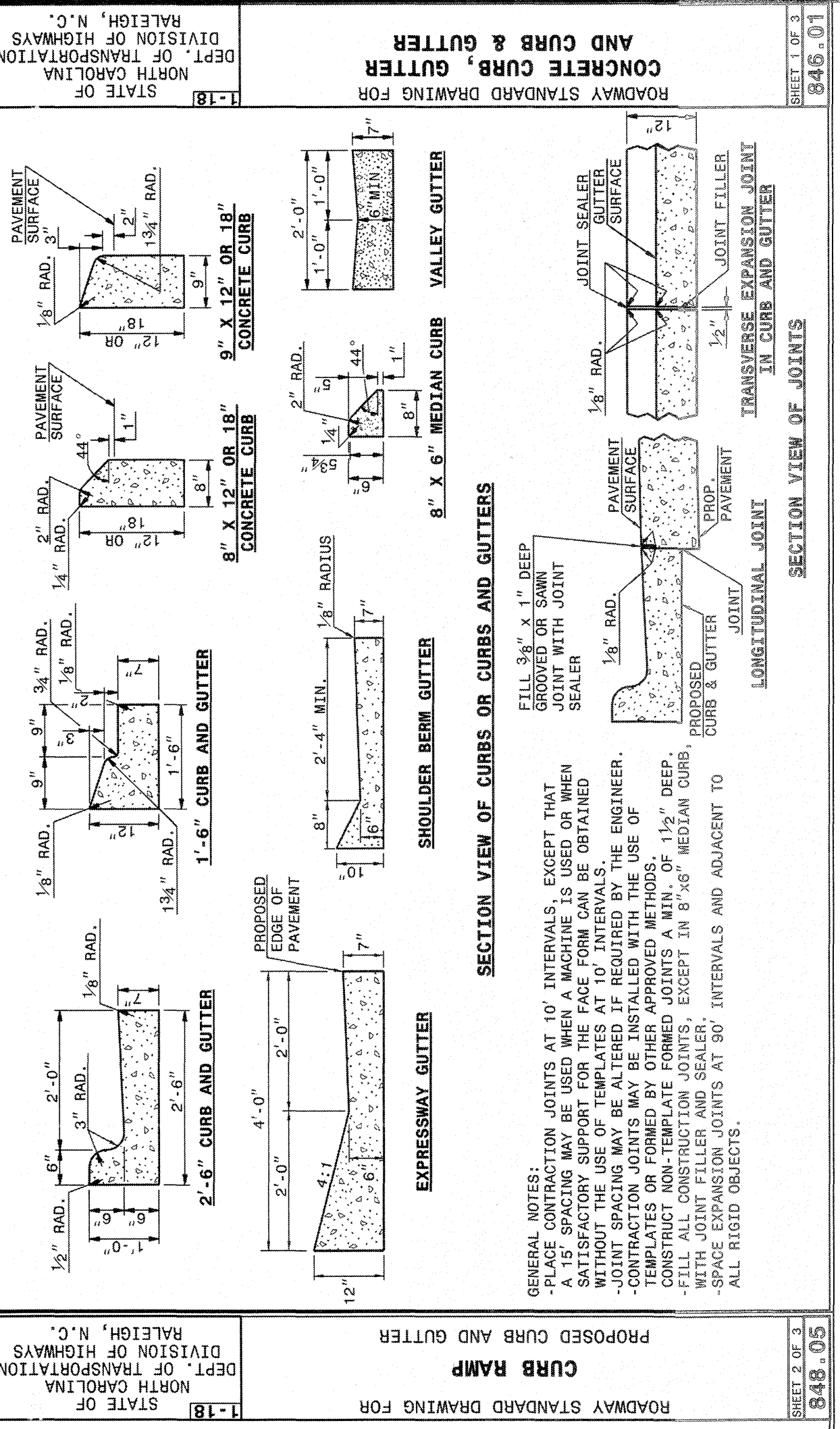
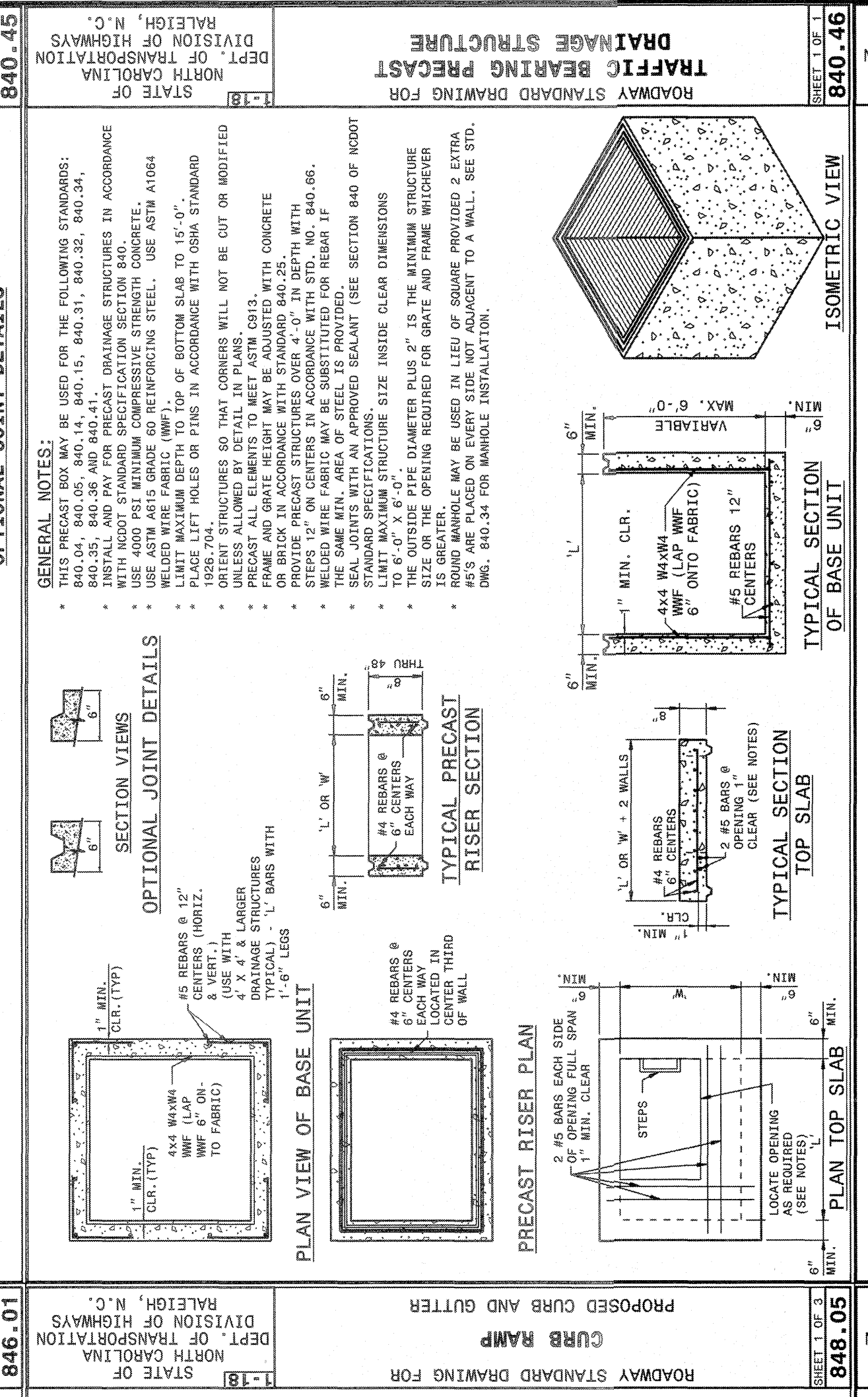
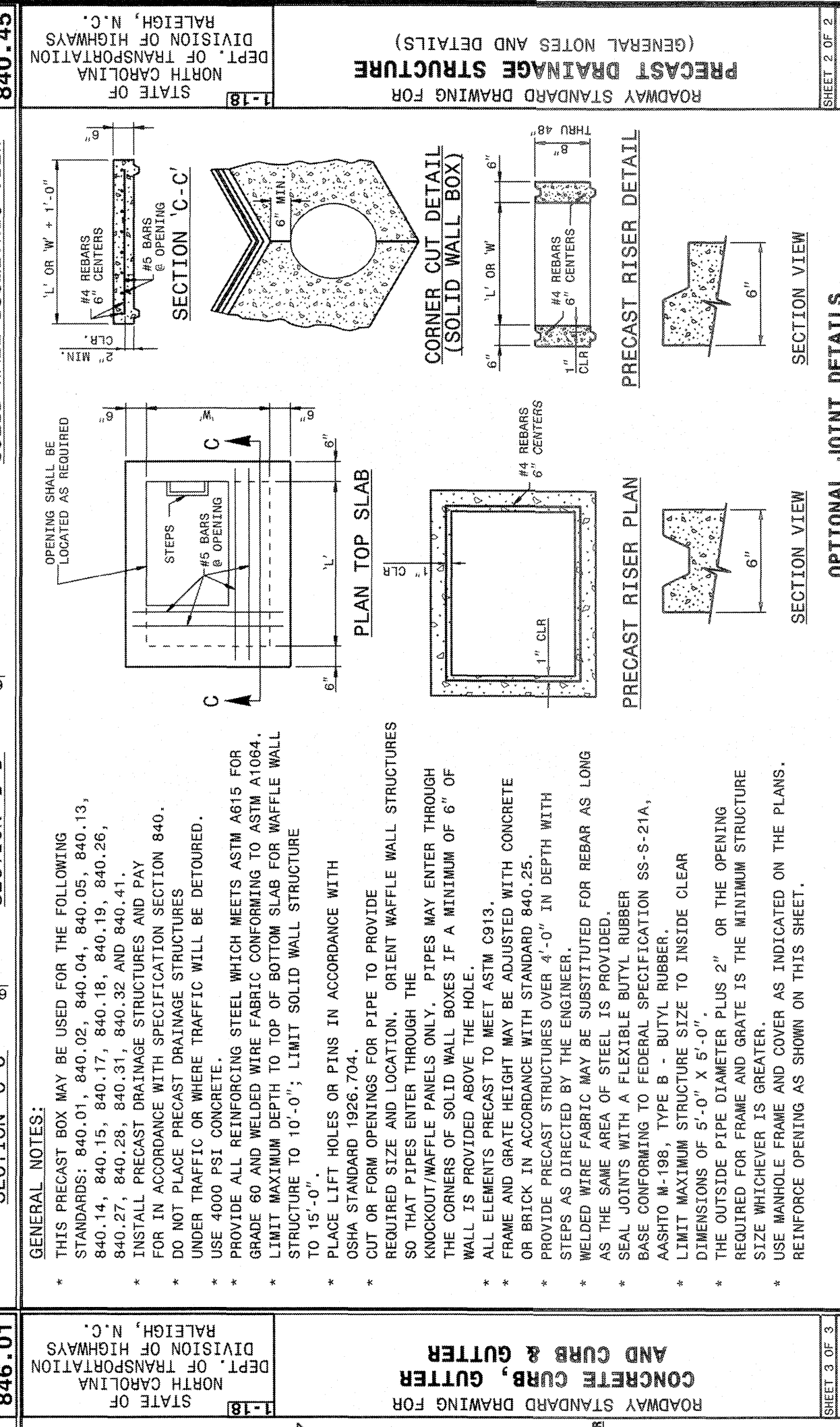
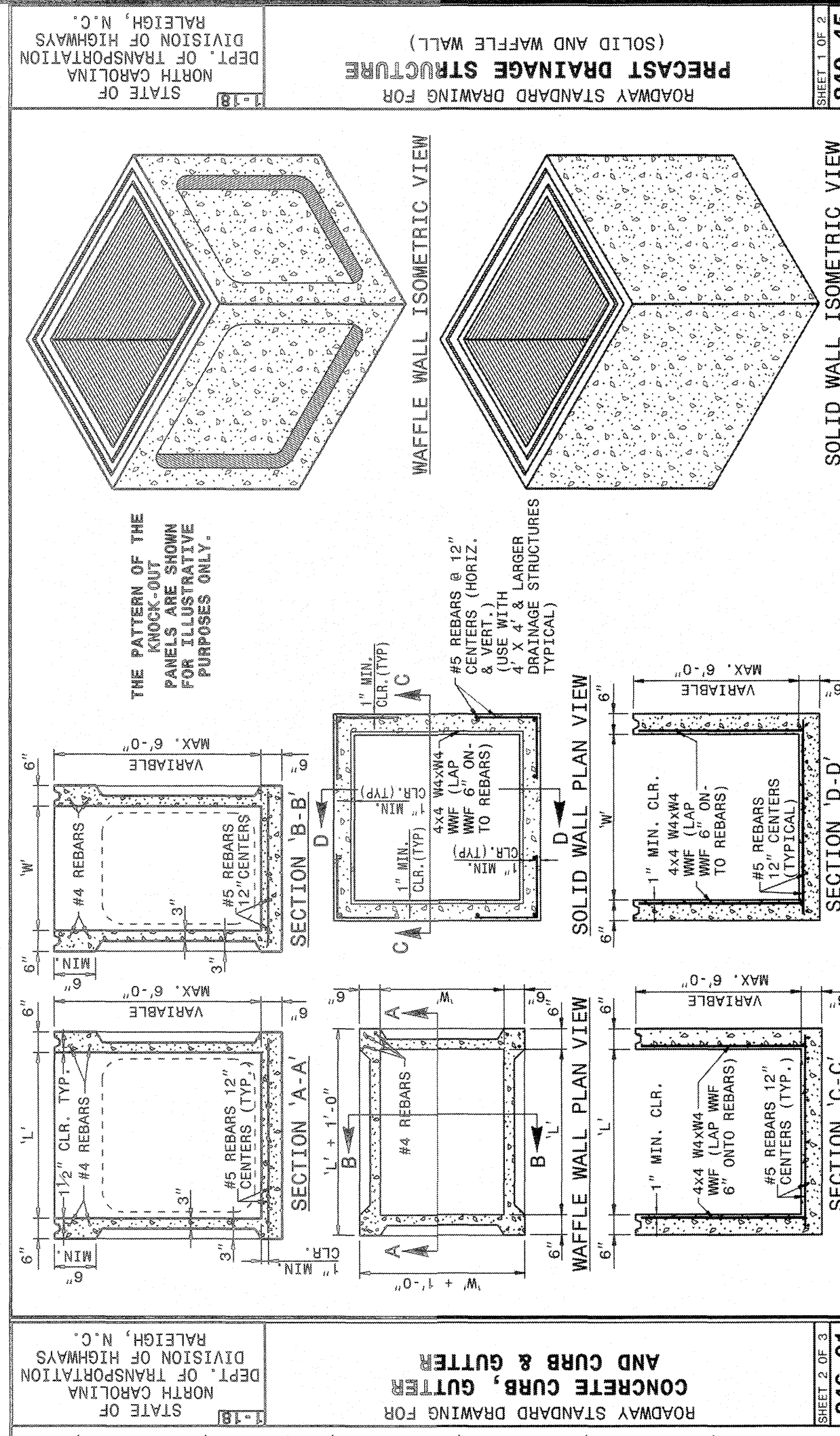
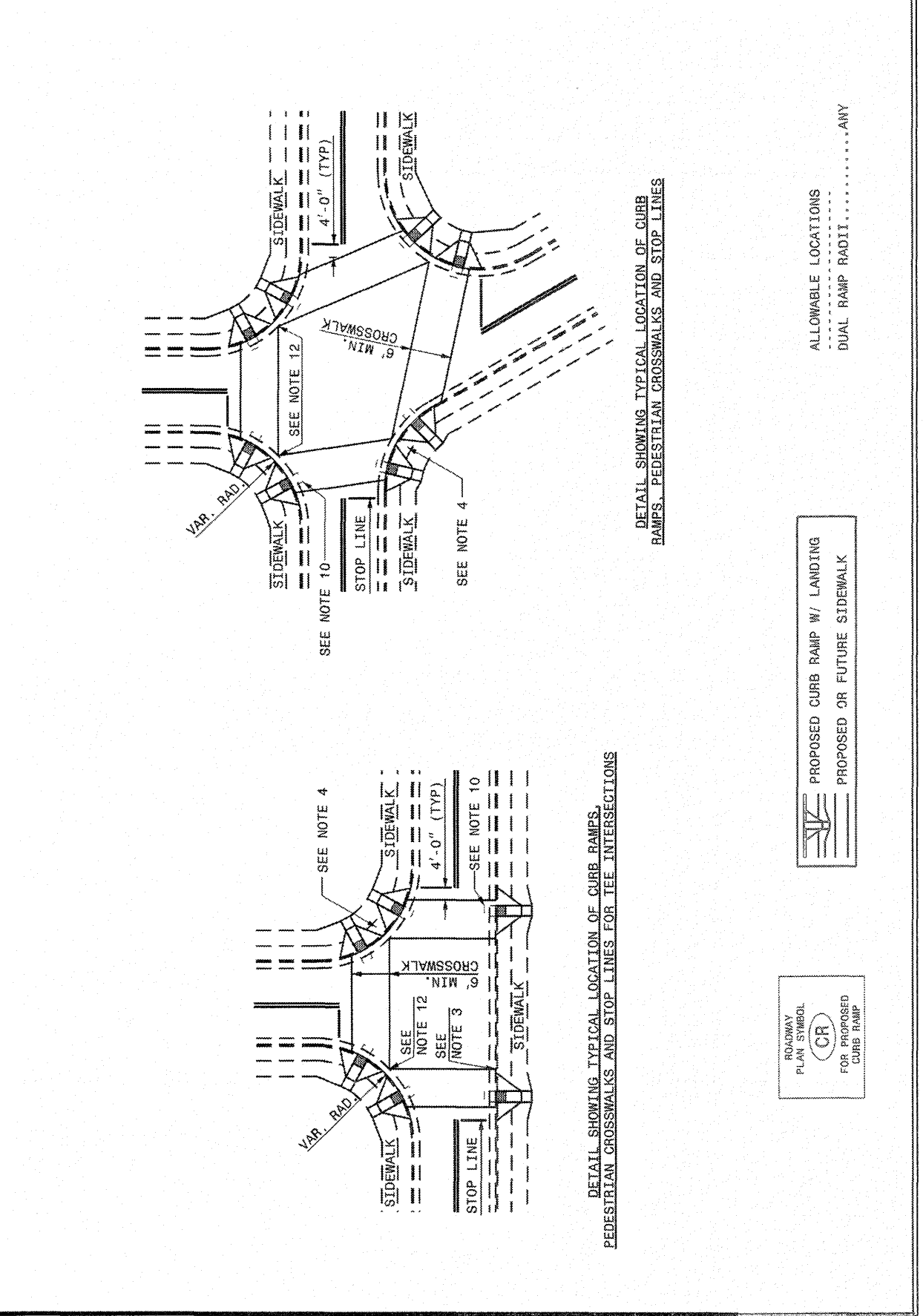
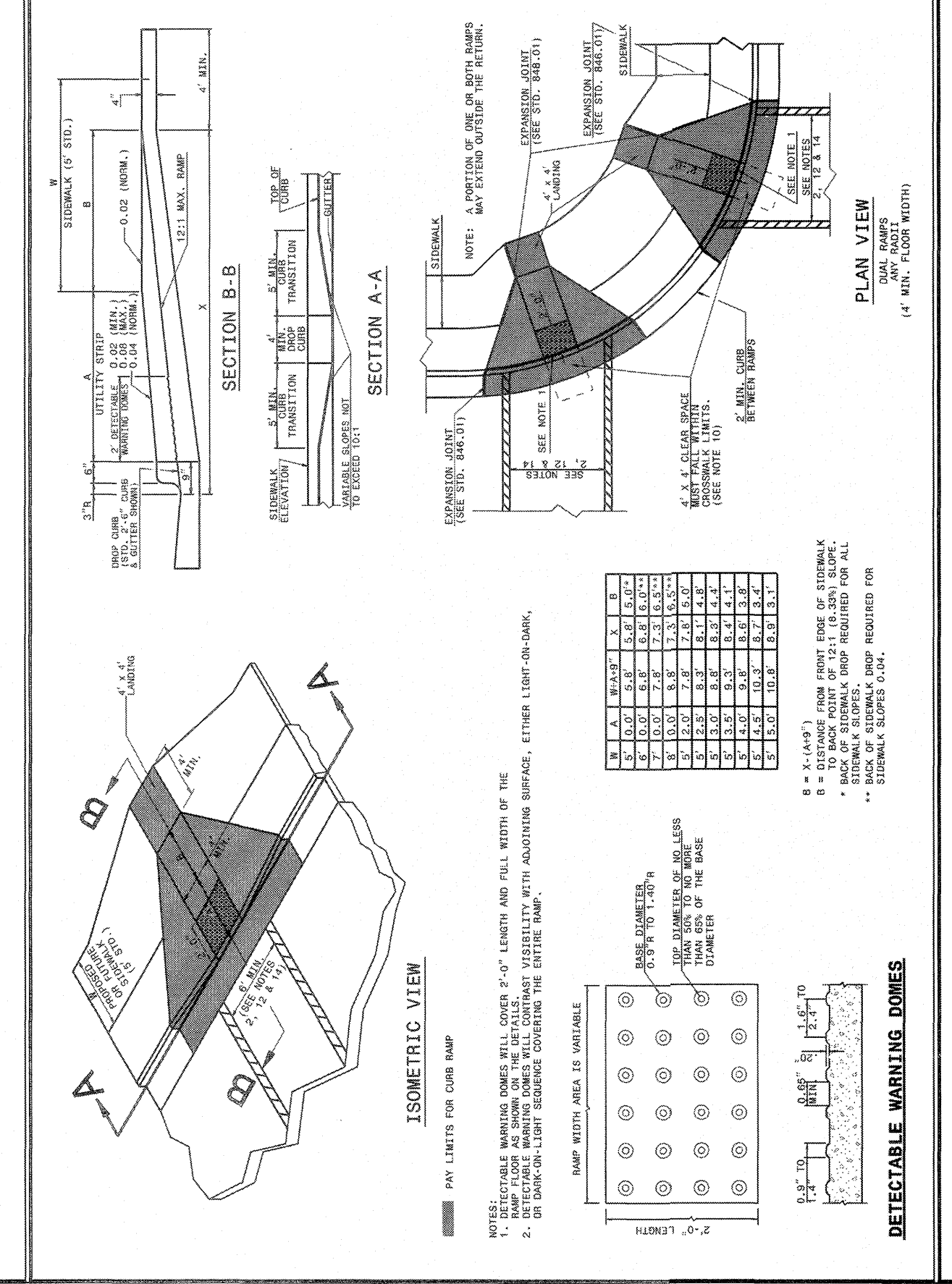
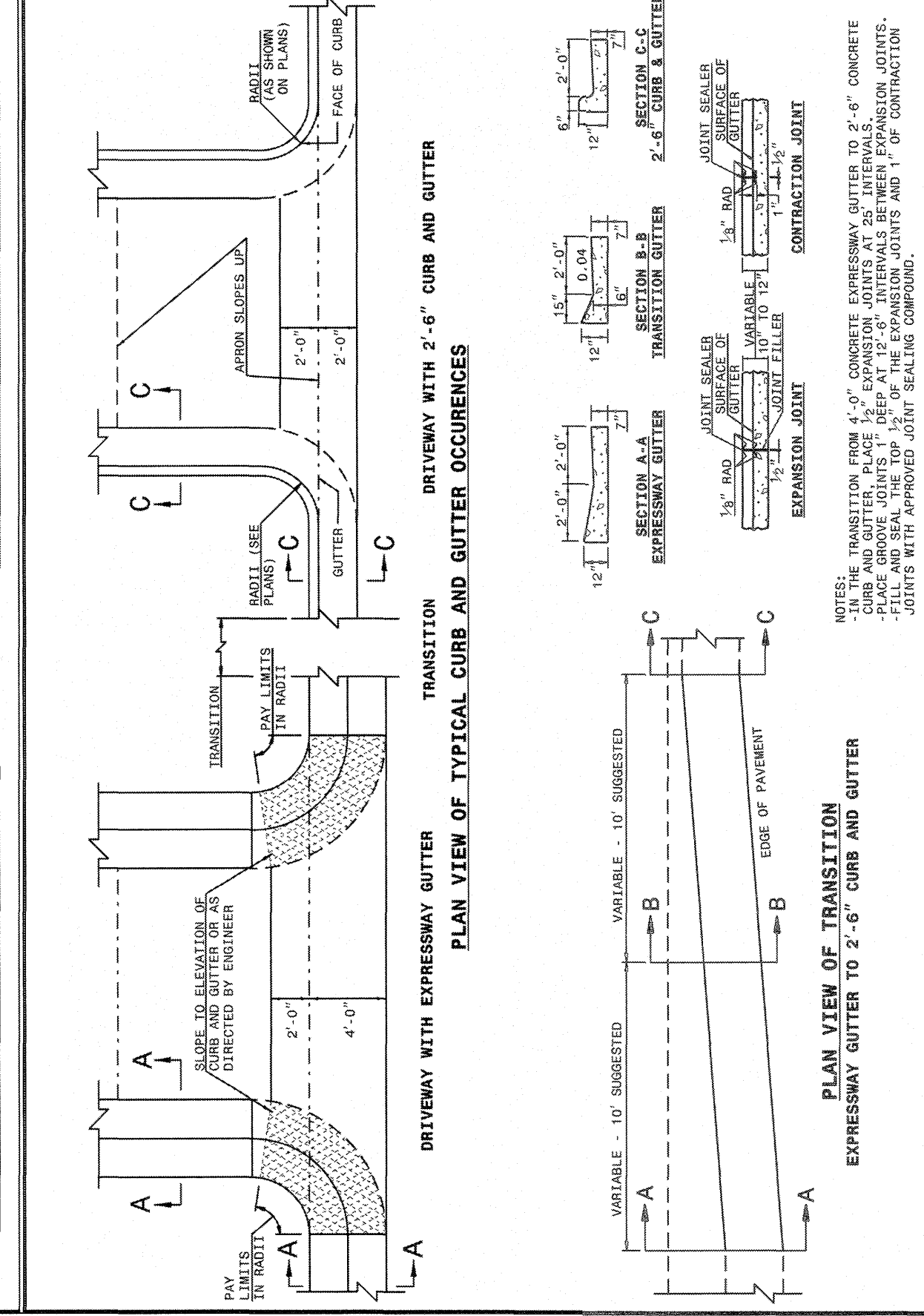
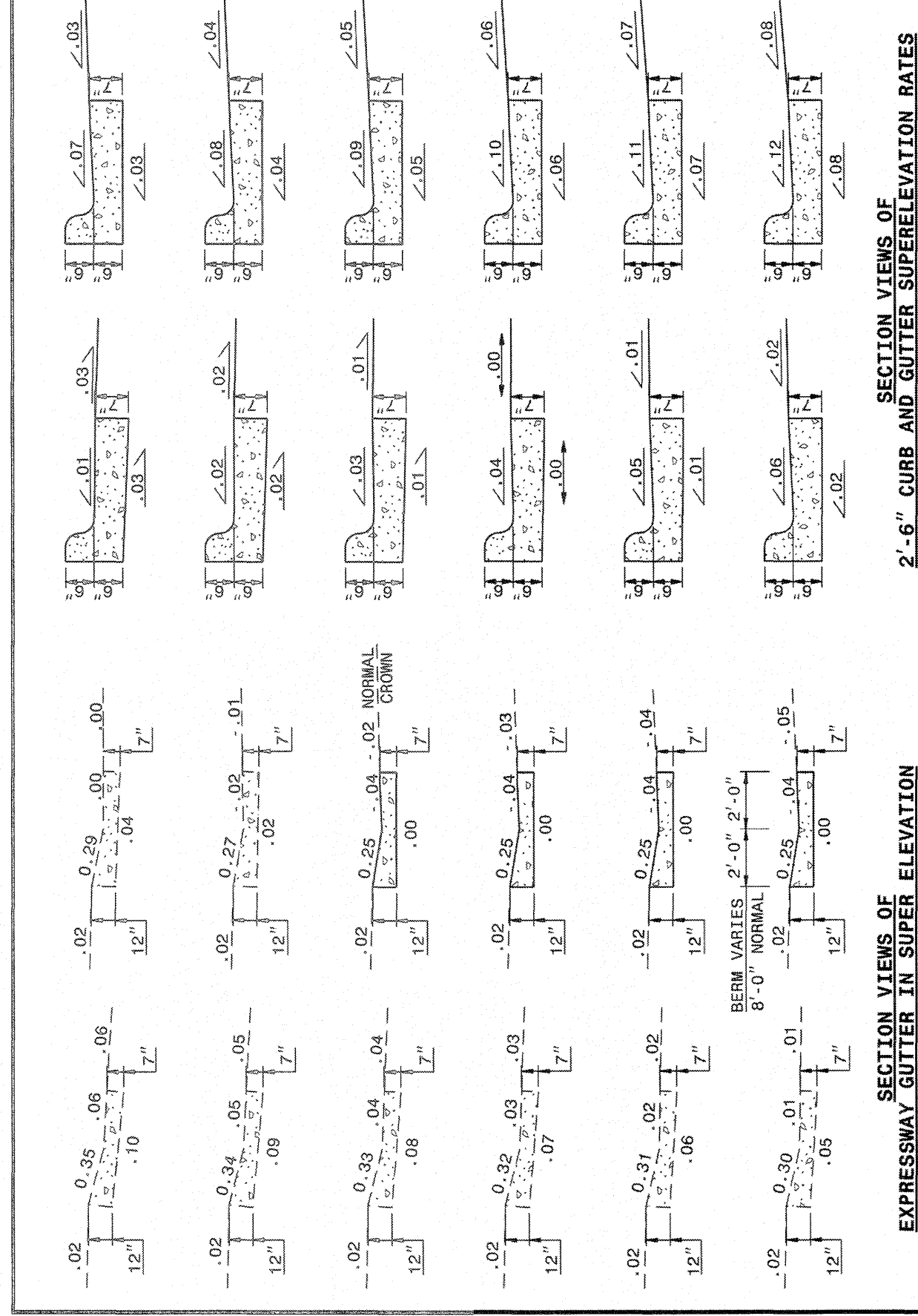


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR CONCRETE CATCH BASIN 12" THRU 54" PIPE

SHEET 2 OF 2  
**840.02**





STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

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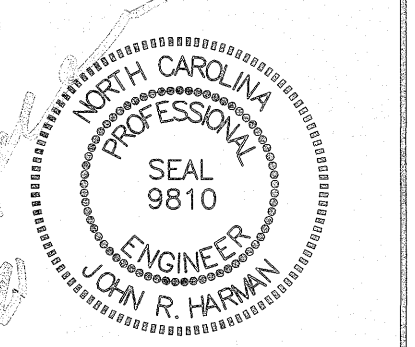
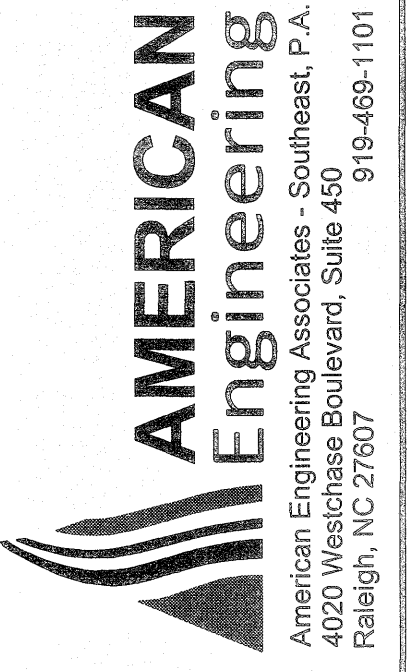


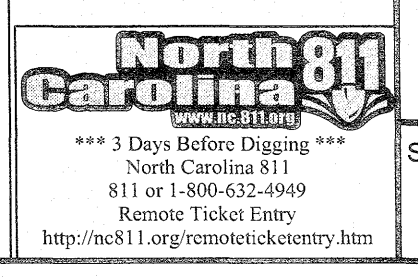
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KALAS FALLS PHASE 3 1832 ROLESVILLE ROAD WAKE COUNTY, NC

JOB NUMBER: 9900 CHECKED BY: DRAWN BY: DATE: FEB 18, 2021 SHEET TITLE: KALAS FALLS CIVIL DETAILS SHEET NO.: CD14

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION Electronic Approval: This approval is being issued electronically. This approval is valid only upon the signature of a City of Raleigh Review Officer below.



3 Days Before Digging \*\*\* 811 or 1-800-632-4949 Raleigh Ticket Entry

http://nc811.org/remoteticketentry.htm



### CURB RAMP AND EXISTING SIDEWALK

**DETAIL SHOWING TYPICAL LOCATION OF CURB RAMP, PEDESTRIAN CROSSWALK AND STOP LINES FOR LANE INTERSECTIONS**

**RESURFACING PROJECTS**  
 PROPOSED CURB RAMP BY LANDING  
 FOR RESURFACING PROJECTS  
 EXISTING SIDEWALK

**ALLOWABLE LOCATIONS**  
 DUAL RAMP (ANY).....ANY

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**CURB RAMP**  
 EXISTING CURB AND GUTTER

SHEET 1 OF 1  
**848.06**

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**CURB RAMPS**

NOTES:

- CONSTRUCT THE RAMP SURFACE TO BE STABLE, FIRM, AND SLIP RESISTANT. CONSTRUCT THE CURB RAMP TYPE AS SHOWN IN THE PAVEMENT MARKING PLANS OR AS DIRECTED BY THE ENGINEER.
- LOCATE CURB RAMPS AND PLACE PEDESTRIAN CROSSWALK MARKINGS AS SHOWN IN THE PAVEMENT MARKING PLANS. WHEN FIELD ADJUSTMENTS REQUIRE MOVING CURB RAMPS OR MARKINGS AS SHOWN, CONTACT THE SIGNING AND DELINEATION UNIT OR LOCATE AS DIRECTED BY THE ENGINEER.
- COORDINATE THE CURB RAMP AND THE PEDESTRIAN CROSSWALK MARKINGS SO A 4'x4' CLEAR SPACE AT THE BASE OF THE CURB RAMP WILL FALL WITHIN THE PEDESTRIAN CROSSWALK LINES.
- SET BACK DISTANCE FROM INSIDE CROSSWALK MARKING TO NEAREST EDGE OF TRAVEL LANE IS 4' MINIMUM.
- REFER TO THE PAVEMENT MARKING PLANS FOR STOP BAR LOCATIONS AT SIGNALIZED INTERSECTIONS. IF A PAVEMENT MARKING PLAN IS NOT PROVIDED, CONTACT THE SIGNAL DESIGN SECTION FOR THE STOP BAR LOCATIONS OR LOCATE AS DIRECTED BY THE ENGINEER.
- TERMINATE PARKING A MINIMUM OF 20' BACK OF A PEDESTRIAN CROSSWALK.
- CONSTRUCT CURB RAMPS A MINIMUM OF 4' WIDE.
- CONSTRUCT THE RUNNING SLOPE OF THE RAMP 6.33% MAXIMUM.
- ALLOWABLE CROSS SLOPE ON SIDEWALKS AND CURB RAMPS WILL BE 2% MAXIMUM.
- CONSTRUCT THE SIDE FLARE SLOPE A MAXIMUM OF 10% MEASURED ALONG THE CURB LINE.
- CONSTRUCT THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE BASE OF THE CURB RAMP A MAXIMUM OF 5% AND MAINTAIN A SMOOTH TRANSITION.
- CONSTRUCT LANDINGS FOR SIDEWALK A MINIMUM OF 4'x4' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION. CONSTRUCT LANDINGS FOR CURB RAMPS A MINIMUM OF 5'x5' WITH A MAXIMUM SLOPE OF 2% IN ANY DIRECTION.
- TO USE A MEDIAN ISLAND AS A PEDESTRIAN REFUGE AREA, MEDIAN ISLANDS WILL BE A MINIMUM OF 6' WIDE. CONSTRUCT MEDIAN ISLANDS TO PROVIDE PASSAGE OVER OR THROUGH THE ISLAND.
- SMALL CHANNELIZATION ISLANDS THAT CAN NOT PROVIDE A 5'x5' LANDING AT THE TOP OF A RAMP, WILL BE CUT THROUGH LEVEL WITH THE SURFACE STREET.
- CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED.
- PLACE A 1/2" EXPANSION JOINT WHERE THE CONCRETE CURB RAMP JOINS THE CURB AS SHOWN IN ROADWAY STANDARD DRAWING 848.01
- PLACE ALL PEDESTRIAN PUSH BUTTON ACTUATORS AND CROSSING SIGNALS AS SHOWN IN THE PLANS OR AS SHOWN IN THE MUTCD.
- CURB RAMPS THROUGH MEDIAN ISLANDS, SINGLE RAMPS AT DUAL CROSSWALKS OR LIMITED R/W SITUATIONS, WILL BE HANDLED BY SPECIAL DETAILS. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

ROADWAY STANDARD DRAWING FOR  
**CURB RAMP**  
 EXISTING CURB AND GUTTER

SHEET 1 OF 1  
**848.05**

### CURB RAMP AND EXISTING SIDEWALK

**DETAIL SHOWING TYPICAL LOCATION OF CURB RAMP, PEDESTRIAN CROSSWALK AND STOP LINES**

**RESURFACING PROJECTS**  
 PROPOSED CURB RAMP BY LANDING  
 FOR RESURFACING PROJECTS  
 EXISTING SIDEWALK

**ALLOWABLE LOCATIONS**  
 DUAL RAMP (ANY).....ANY

STATE OF NORTH CAROLINA  
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 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**CURB RAMP**  
 EXISTING CURB AND GUTTER

SHEET 1 OF 1  
**848.06**

### CURB RAMP AND EXISTING SIDEWALK WITH GRASS STRIP

**ISOMETRIC VIEW**

**PLAN VIEW**  
 (40' WIDE, FLOOR FINISH)

**SECTION A-A**

**SECTION B-B**

NOTE: PLACE DETECTABLE WARNING DOMES TO COVER 4'-0" LENGTH AND 2'-0" WIDTH OF CURB RAMP WITH AN ADJACENT SIDEWALK. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

STATE OF NORTH CAROLINA  
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 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**CURB RAMP**  
 EXISTING CURB AND GUTTER

SHEET 1 OF 1  
**848.06**

### TWO-WAY UNDIVIDED WORK ZONE ADVANCE WARNING SIGNS FOR

**GENERAL NOTES**

- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK UNLESS COVERED.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT LONGER THAN 3 CONSECUTIVE DAYS.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE. FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- STREET LIGHTING SIGNS AND SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATIONS FOR WORK ZONE SIGNS.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH STD. 1110.01.
- DO NOT BACK MAKE SIGN REPORTS.

STATE OF NORTH CAROLINA  
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ROADWAY STANDARD DRAWING FOR  
**WORK ZONE ADVANCE WARNING SIGNS FOR**  
 TWO-WAY UNDIVIDED FACILITIES

SHEET 1 OF 1  
**1101.01**

### CURB RAMP AND EXISTING SIDEWALK ADJACENT TO CURB

**ISOMETRIC VIEW**

**PLAN VIEW**  
 (40' WIDE, FLOOR FINISH)

**SECTION A-A**

**SECTION B-B**

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STATE OF NORTH CAROLINA  
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 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**CURB RAMP**  
 EXISTING CURB AND GUTTER

SHEET 1 OF 1  
**848.06**

### TEMPORARY LANE CLOSURES

**GENERAL NOTES FOR FLAGGING OPERATIONS**

- REFER TO STD. 1110.01, CHAPTER 3.4.4, FOR SIGN SPACING AND INTERSPACING.
- INSTALL LANE CLOSURE SIGNS WITH THE TRAFFIC FLOW, BEGINNING WITH DIVISION ON THE TRAFFIC FLOW, BEGINNING WITH DIVISION ON THE TRAFFIC FLOW, BEGINNING WITH DIVISION ON THE TRAFFIC FLOW.
- PLACE CONES AT THE END OF THE WORK AREA AT THE MAXIMUM SPACING EQUAL IN FEET TO 2 TIMES THE WIDTH OF THE WORK AREA.
- REFLECTORIZED FLAGMATS AT THE BUFFER SPACE SHOULD HAVE SPACING SHORT DISTANCE IS 10 FEET TO THE FLAGMAT (REFER TO STD. 1011.1, SHEET 01).
- WHEN FLAGGING OPERATIONS ARE USED IN LANE CLOSURES, REFER TO STD. 1100.01.
- USE FLAGGING OPERATIONS TO CONTROL TRAFFIC AT INTERSECTIONS AFFECTED BY THE LANE CLOSURE.
- USE FLAGGING OPERATIONS TO CONTROL TRAFFIC AT INTERSECTIONS AFFECTED BY THE LANE CLOSURE.
- REFER TO THE CONTRACT MANUAL FOR FLAGGING CONTROL, REQUIREMENTS, AND PROCEDURES.
- DO NOT REDUCE THE CONCRETE WIDTH FOR FLAGGING CONTROL, REQUIREMENTS, AND PROCEDURES.
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STATE OF NORTH CAROLINA  
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 RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR  
**TEMPORARY LANE CLOSURES**  
 2-LANE, 2-WAY ROADWAY-1 LANE CLOSED

SHEET 1 OF 1  
**1101.02**

### RETROFITTING DETECTABLE WARNING DOMES ONTO EXISTING CURB RAMP

**ISOMETRIC VIEW**

**PLAN VIEW**  
 (40' WIDE, FLOOR FINISH)

**SECTION A-A**

**SECTION B-B**

NOTE: PLACE DETECTABLE WARNING DOMES TO COVER 4'-0" LENGTH AND 2'-0" WIDTH OF CURB RAMP WITH AN ADJACENT SIDEWALK. CONTACT THE CONTRACT STANDARDS AND DEVELOPMENT UNIT FOR THE DETAILS OR FOR A SPECIAL DESIGN.

STATE OF NORTH CAROLINA  
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ROADWAY STANDARD DRAWING FOR  
**CURB RAMP**  
 EXISTING CURB AND GUTTER

SHEET 1 OF 1  
**848.06**

CITY OF RALEIGH - PLANS AUTHORIZED FOR CONSTRUCTION

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City of Raleigh Development Approval

Raleigh Water Review Officer



JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**  
 SHEET NO.:  
**CD15**

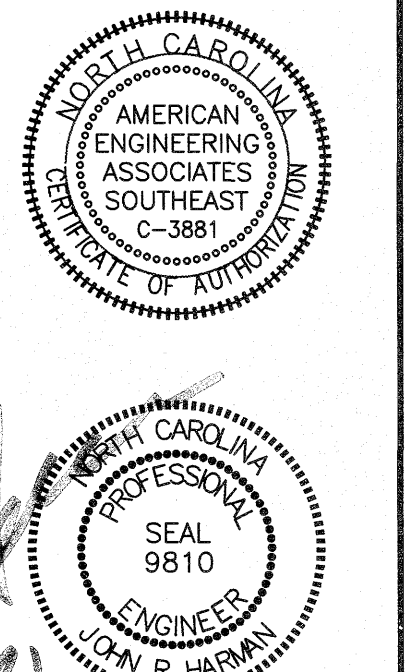
**KALAS FALLS  
 PHASE 3  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC**

**STIPULATION FOR REUSE**

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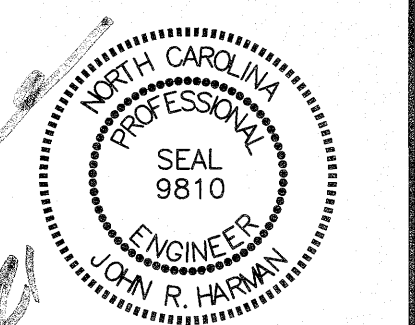
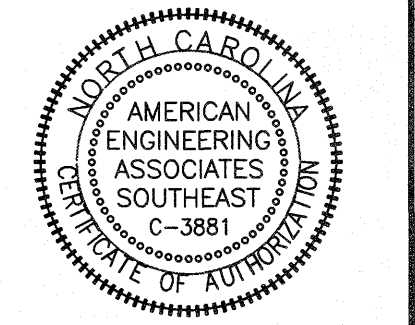
NO.	DATE	REVISION

DETAIL SELECTION ONLY



**AMERICAN Engineering**  
 American Engineering Associates - Southeast, P.A.  
 4020 Westchase Boulevard, Suite 450  
 Raleigh, NC 27607  
 919-469-1101





DETAIL SELECTION ONLY

NO.	DATE	REVISION

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**KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC**

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**  
SHEET NO.:  
**CD16**

**DRUMS**  
ROADWAY STANDARD DRAWING FOR

**GENERAL NOTES**

- BALLASTING SHALL BE ACCOMPLISHED BY THE MANUFACTURER. THE MANUFACTURER SHALL FURNISH A PREPARED WEAPONS BASE WITHIN THE BALLASTING AREA TO BE USED BY THE MANUFACTURER. DO NOT PLACE BALLAST OVER THE WEAPONS BASE.
- IT IS NECESSARY TO PLACE THE NAME OF THE AGENCY, CONTRACTOR, OR SUPPLIER ON NON-RETROREFLECTIVE DRAW SURFACES. SHOW THE LETTERS AND NUMBERS USING A NON-RETROREFLECTIVE COLOR AND NOT OVER 2" IN HEIGHT.
- ALL DRUMS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCT LIST.
- REFER TO THE STANDARD SPECIFICATIONS FOR SIGNS AND STRUCTURES FOR ADDITIONAL INFORMATION.

**ADVANCE WARNING SIGN SPACING CHART**

POSTED SPEED (MPH)	ADVANCE WARNING SIGN SPACING CHART
20	200
25	300
30	400
35	500
40	600
45	700
50	800
55	900
60	1000
65	1100
70	1200
75	1300
80	1400
85	1500
90	1600
95	1700
100	1800
110	1900
120	2000

**STATIONARY OR PORTABLE SIGNS**

**GENERAL NOTES**

- REFER TO 2009 MUTCD ON THE LATEST EDITION.
- SPACING OF ADVANCE WARNING SIGN SPACING CHART WHERE A SERIES OF 2 OR MORE SIGNS ARE USED. INDICATE THE POSITION OF EACH SIGN ON THE SPACING CHART.
- APPLY THE ADVANCE WARNING SIGN SPACING CHART WHERE A SERIES OF 2 OR MORE SIGNS ARE USED. INDICATE THE POSITION OF EACH SIGN ON THE SPACING CHART.

**FLASHING ARROW BOARDS**  
ROADWAY STANDARD DRAWING FOR

**GENERAL NOTES**

- DO NOT USE STRAIGHT-LINE CAUTION OR STATIC CHEVRON DISPLAYS.
- USE A MINIMUM MOUNTING HEIGHT OF 7 FEET FROM GROUND LEVEL TO THE BOTTOM OF THE PANEL.
- USE FLASHING ARROW BOARDS, EXCEPT ON VEHICLE-MOUNTED PANELS WHICH SHOULD BE AS HIGH AS PRACTICAL.
- USE ARROW BOARD ELEMENTS CAPABLE OF A MINIMUM 50 PERCENT DIMMING FROM THE FULL RATED LAMP VOLTAGE. USE FULL LAMP VOLTAGE DURING THE "DAY" AND DIMMED MODE AT NIGHT.
- USE ULTRA-VIOLET, NON-RETROREFLECTIVE COLOR AND FINISH ON ALL TRAFFIC SIGN PANELS.
- ALL FLASHING ARROW BOARDS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.

**FLASHING ARROW BOARD MODES**

**TYPICAL FLASHING ARROW BOARD**

FLASHING ARROW BOARD TYPE	MINIMUM SIZE (INCHES)	MINIMUM NUMBER OF ELEMENTS
A	36" x 48"	1
B	36" x 48"	1
C	36" x 48"	1

**GENERAL NOTES**

- USE YELLOW ELEMENTS FOR LEFT LANE CLOSURE AND RIGHT LANE CLOSURE.
- USE RED ELEMENTS FOR MOVING CHEVRON.
- USE WHITE ELEMENTS FOR DOUBLE ARROW CENTER LANE CLOSURE.
- USE FLAT BLACK NON-REFLECTIVE ELEMENTS FOR MOUNTING AND SUPPORT STRUCTURES.

**PORTABLE WORK ZONE SIGNS**  
ROADWAY STANDARD DRAWING FOR

**GENERAL NOTES**

- USE PORTABLE WORK ZONE SIGNS AND STANDBY SIGNS. USE PORTABLE WORK ZONE SIGNS AND STANDBY SIGNS ON ALL PORTABLE WORK ZONE SIGNS AND STANDBY SIGNS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.
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**STATIONARY WORK ZONE SIGNS**  
ROADWAY STANDARD DRAWING FOR

**GENERAL NOTES**

- POSTS SHALL BE 2 1/2" X 2 1/2" X 12 GAUGE STEEL.
- ANCHORS SHALL BE 3" X 3" X 7 GAUGE STEEL.
- CONNECTIONS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

**ANCHOR DETAIL**

**POST TO ANCHOR FASTENER DETAIL**

**ANCHOR DETAIL**

**GENERAL NOTES**

- USE PORTABLE WORK ZONE SIGNS AND STANDBY SIGNS. USE PORTABLE WORK ZONE SIGNS AND STANDBY SIGNS ON ALL PORTABLE WORK ZONE SIGNS AND STANDBY SIGNS MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST.
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**TRAFFIC CONTROL DESIGN TABLES**  
ROADWAY STANDARD DRAWING FOR

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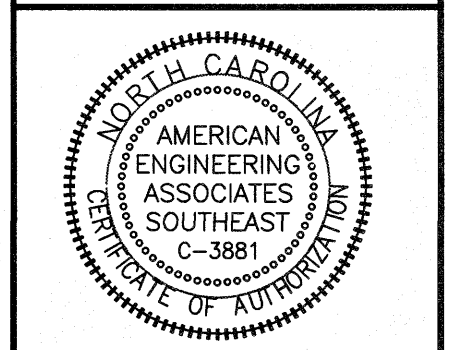
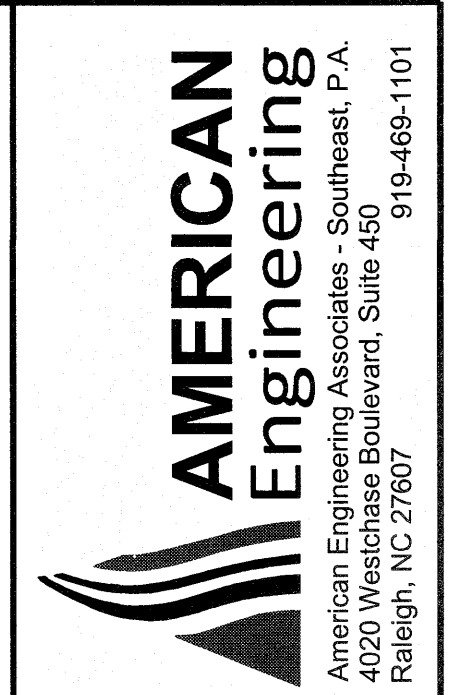
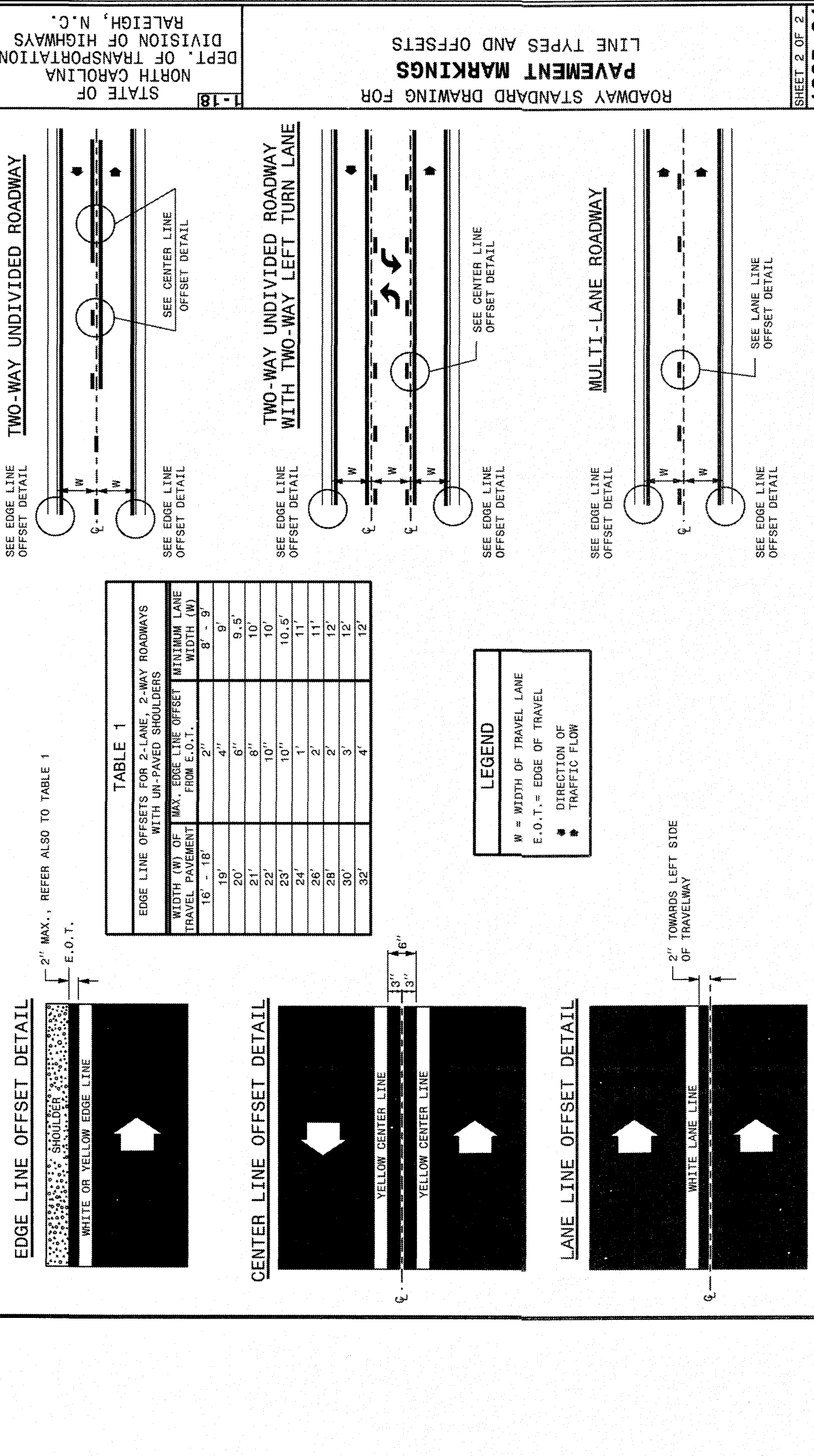
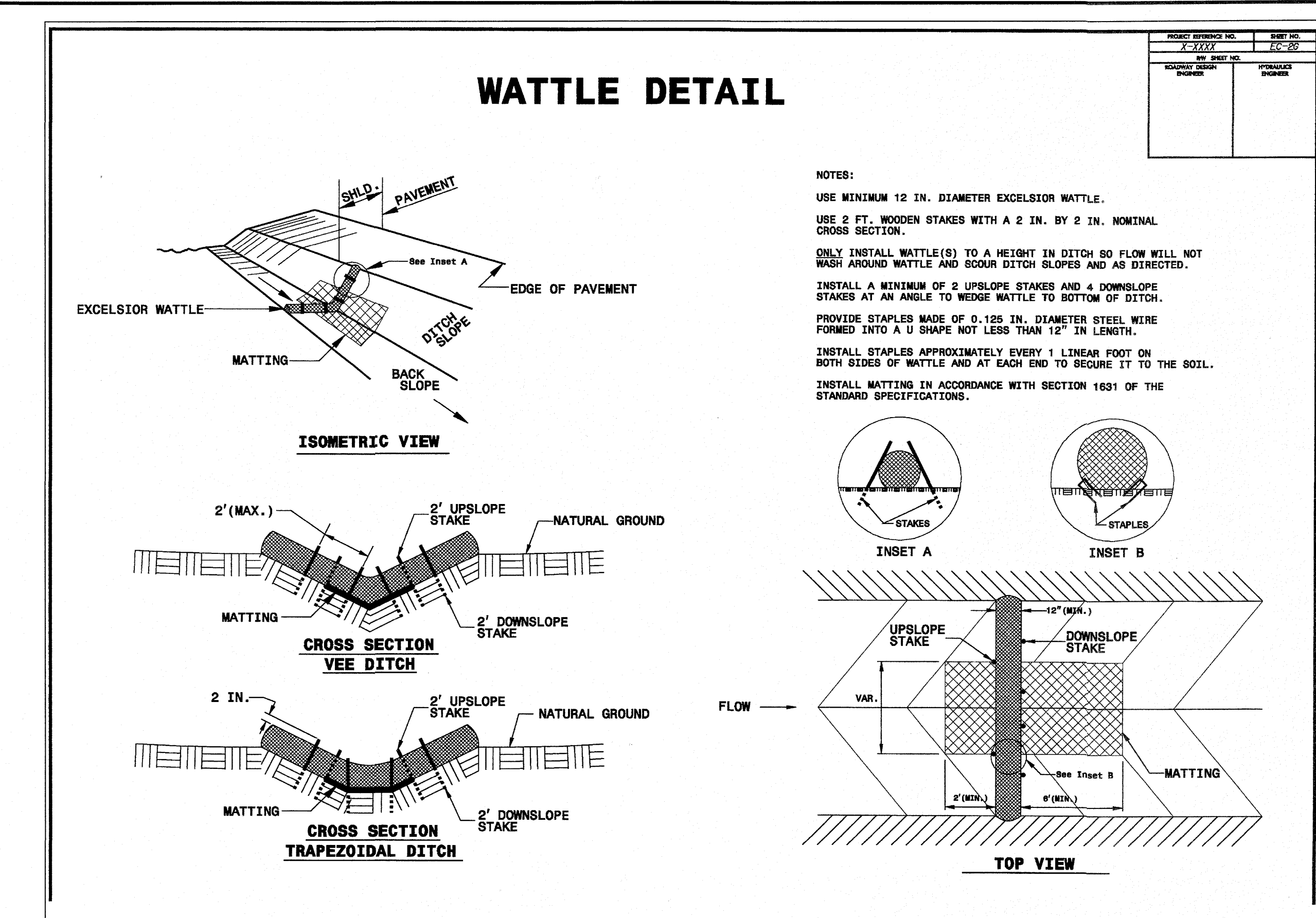
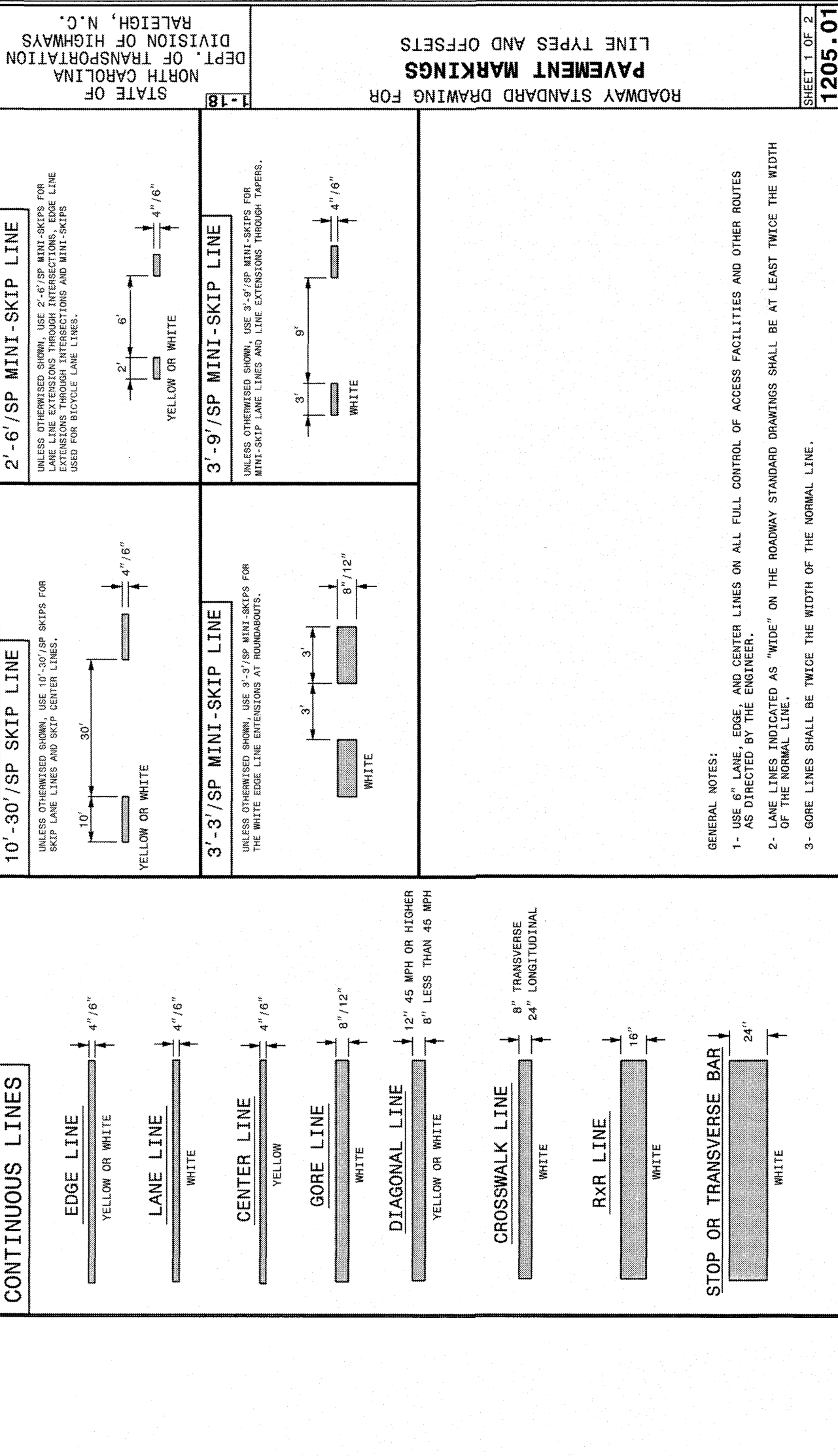
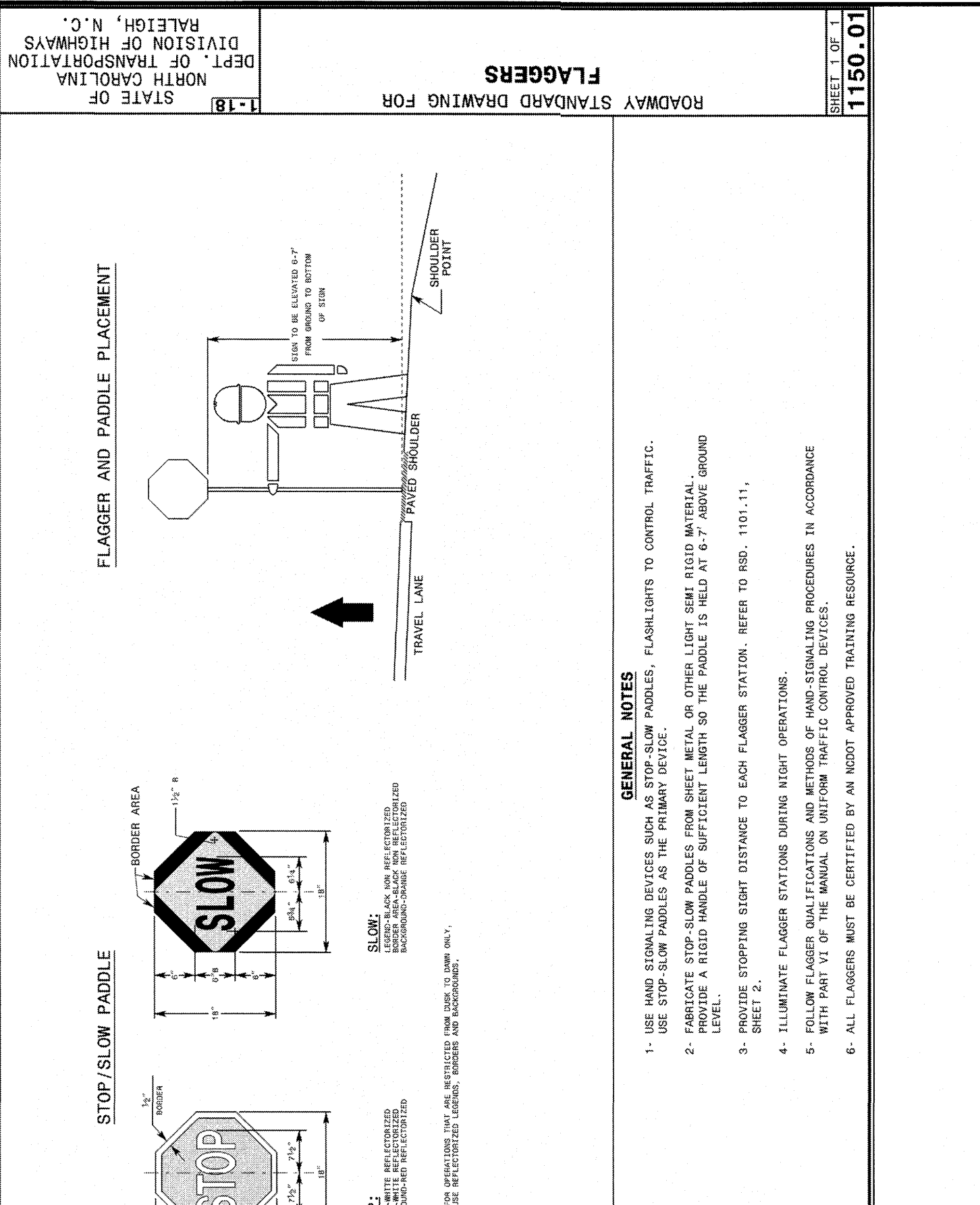
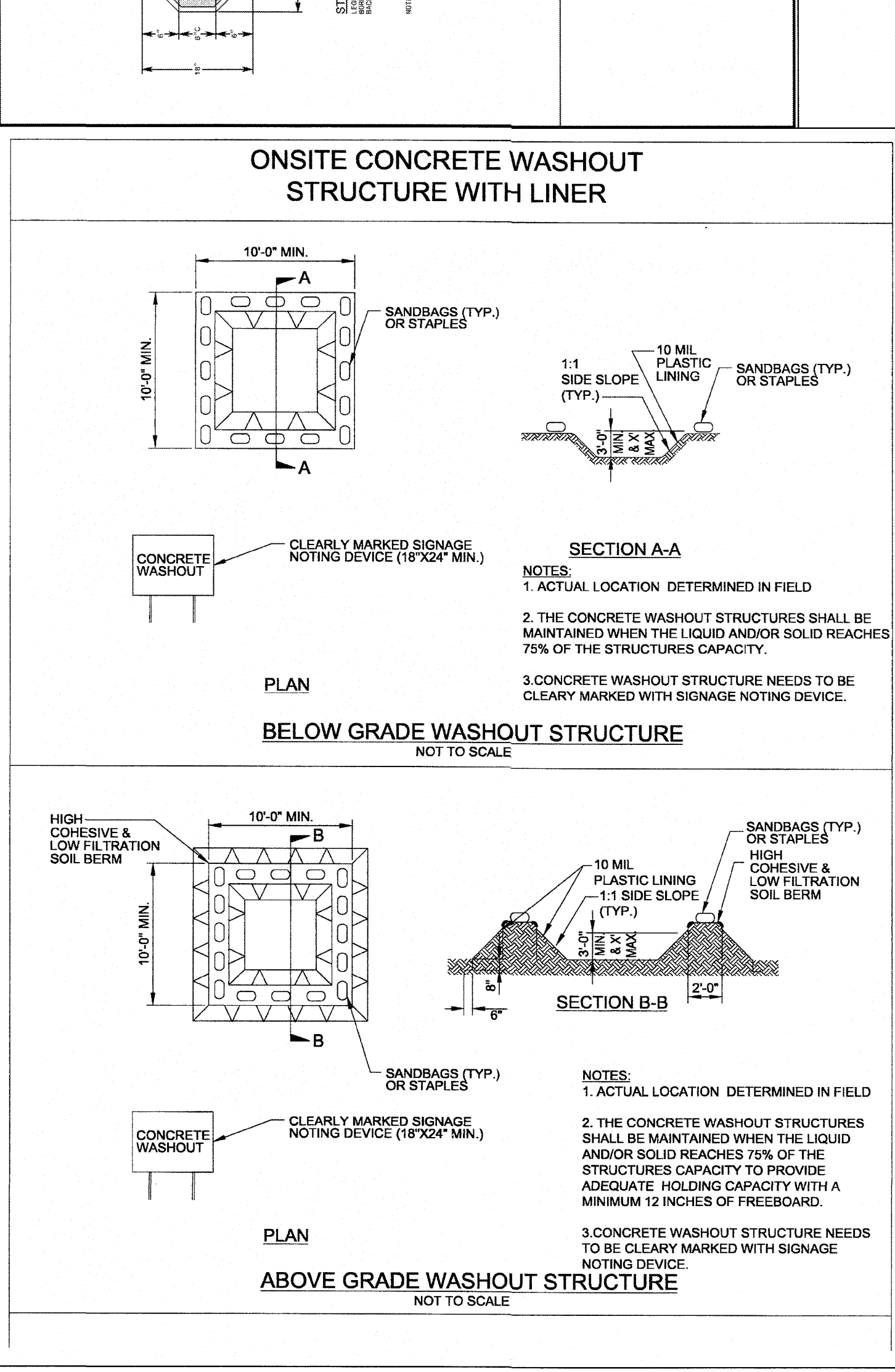
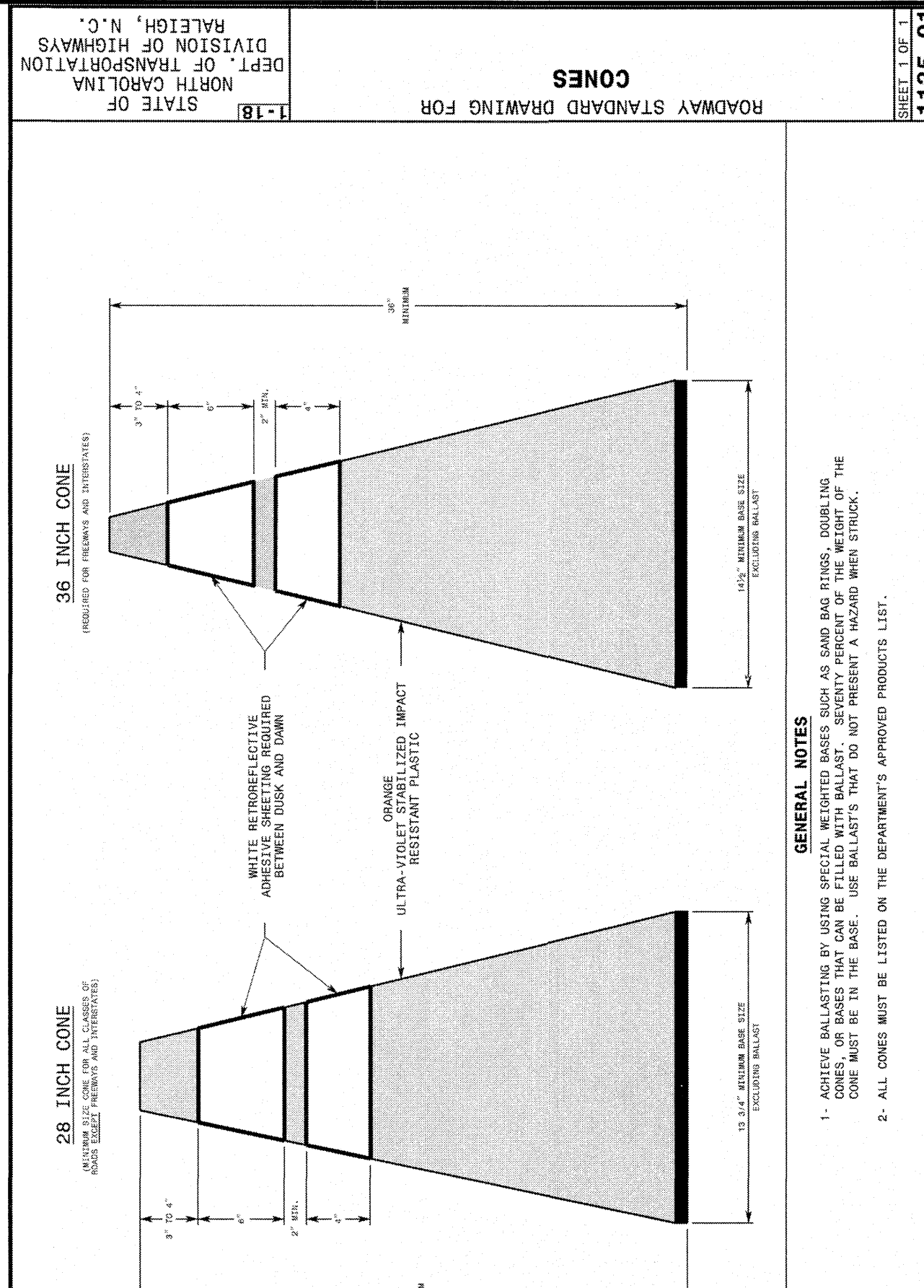
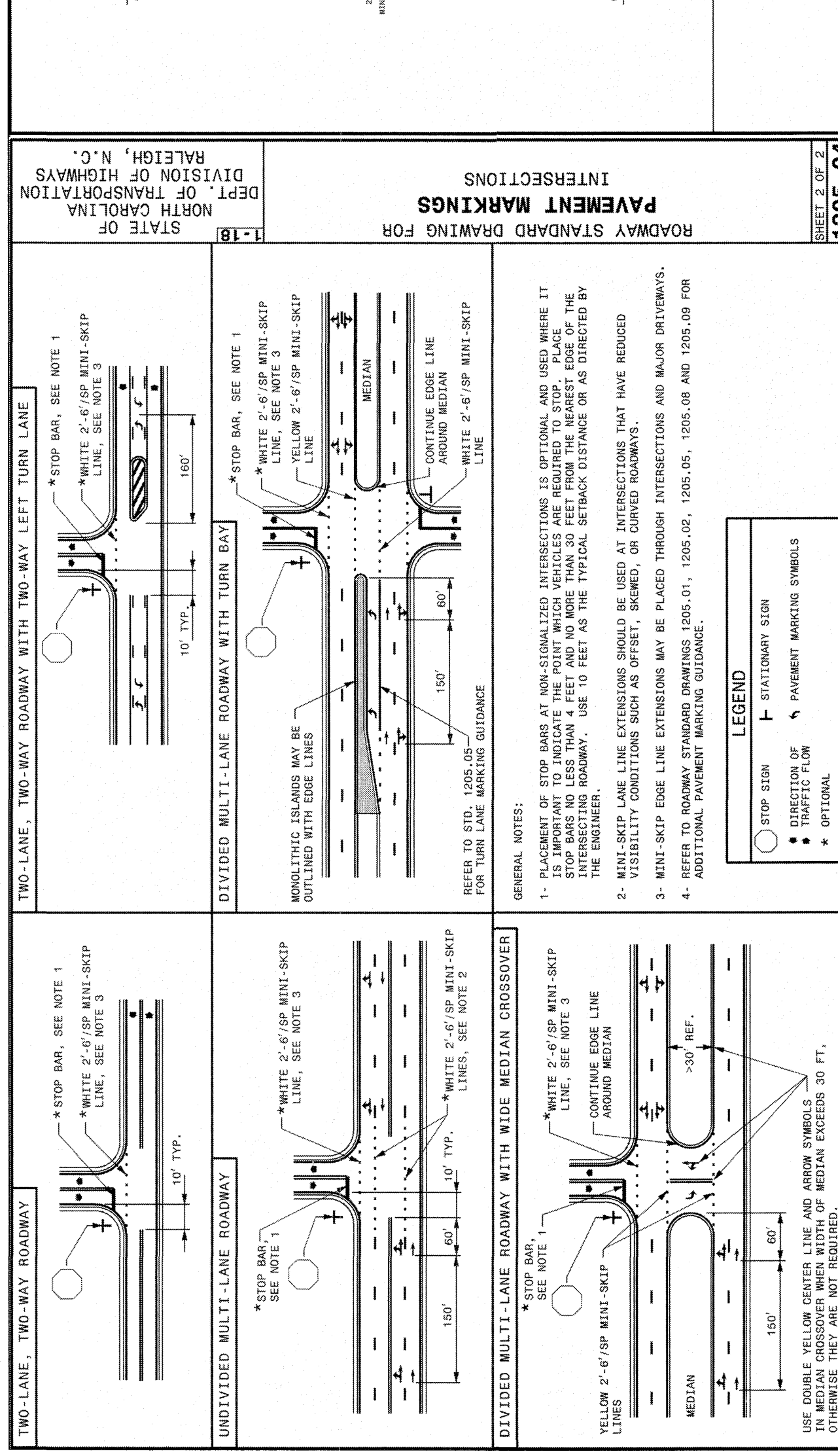
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ROADWAY STANDARD DRAWING FOR





DETAIL SELECTION ONLY

NO.	DATE	REVISION

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**KALAS FALLS PHASE 3**  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

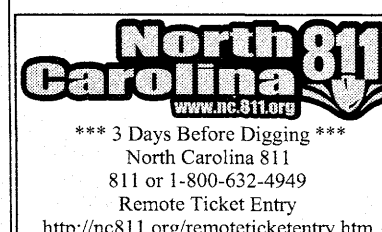
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CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**  
SHEET NO.:  
**CD17**

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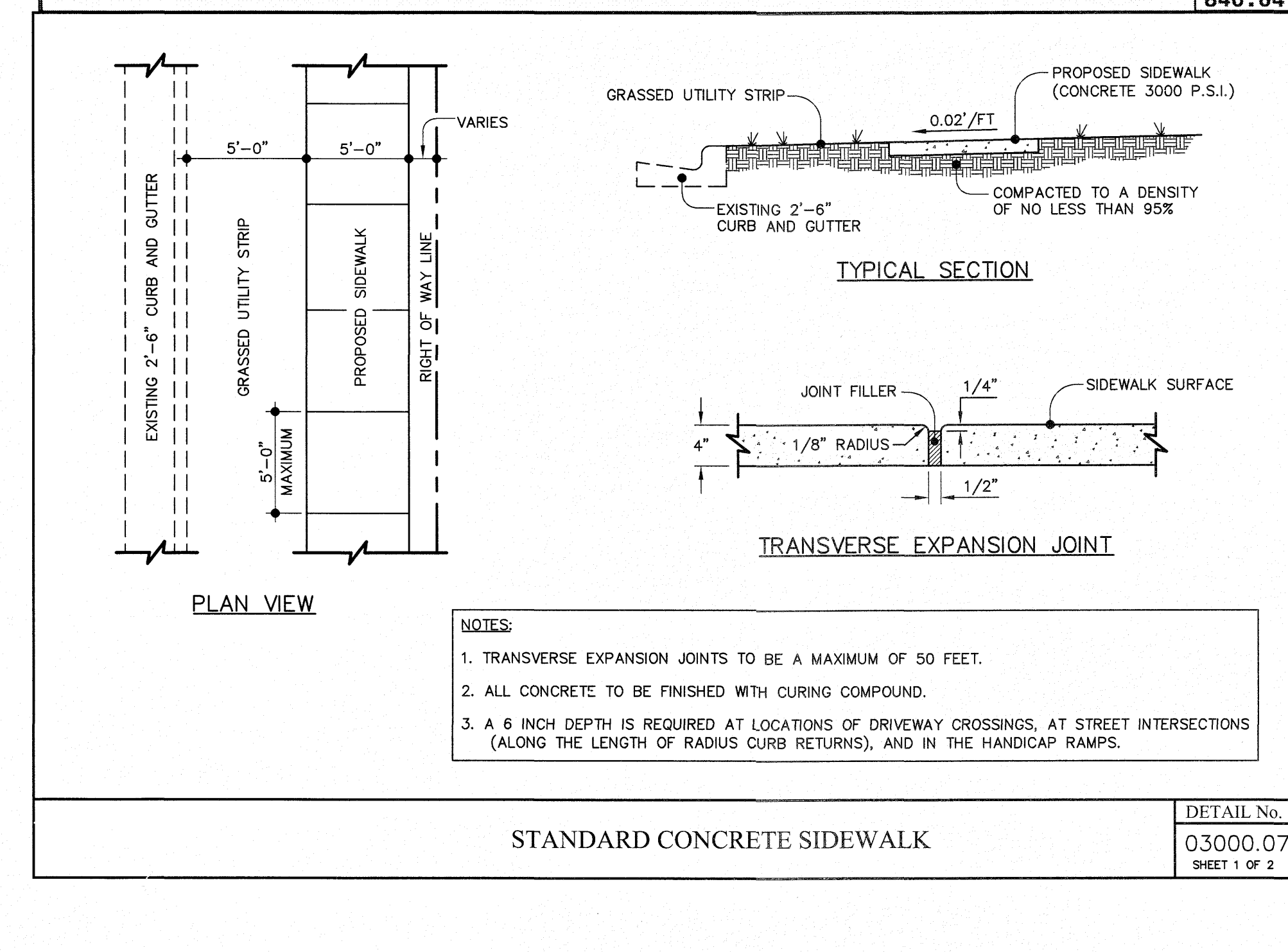
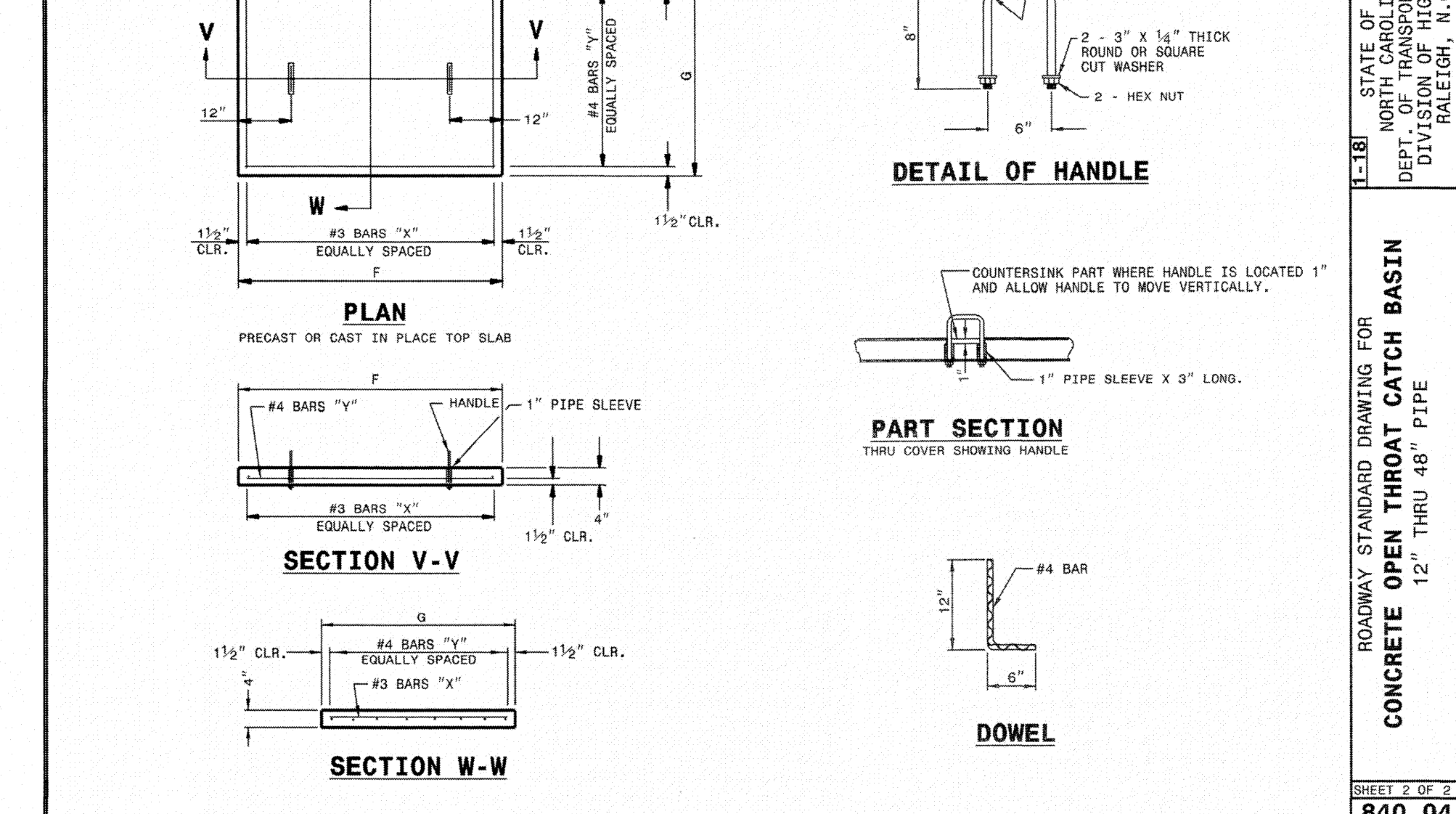
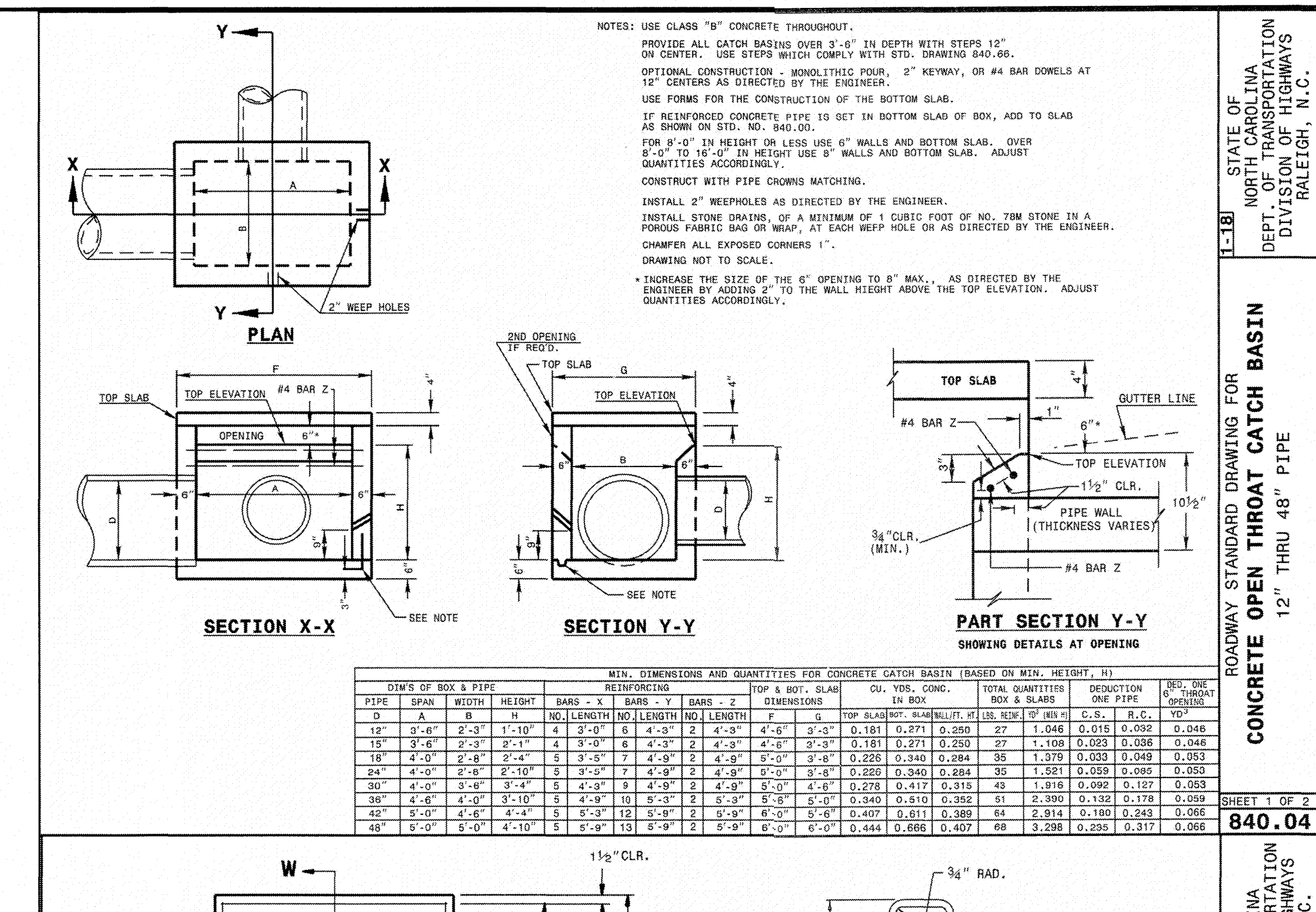
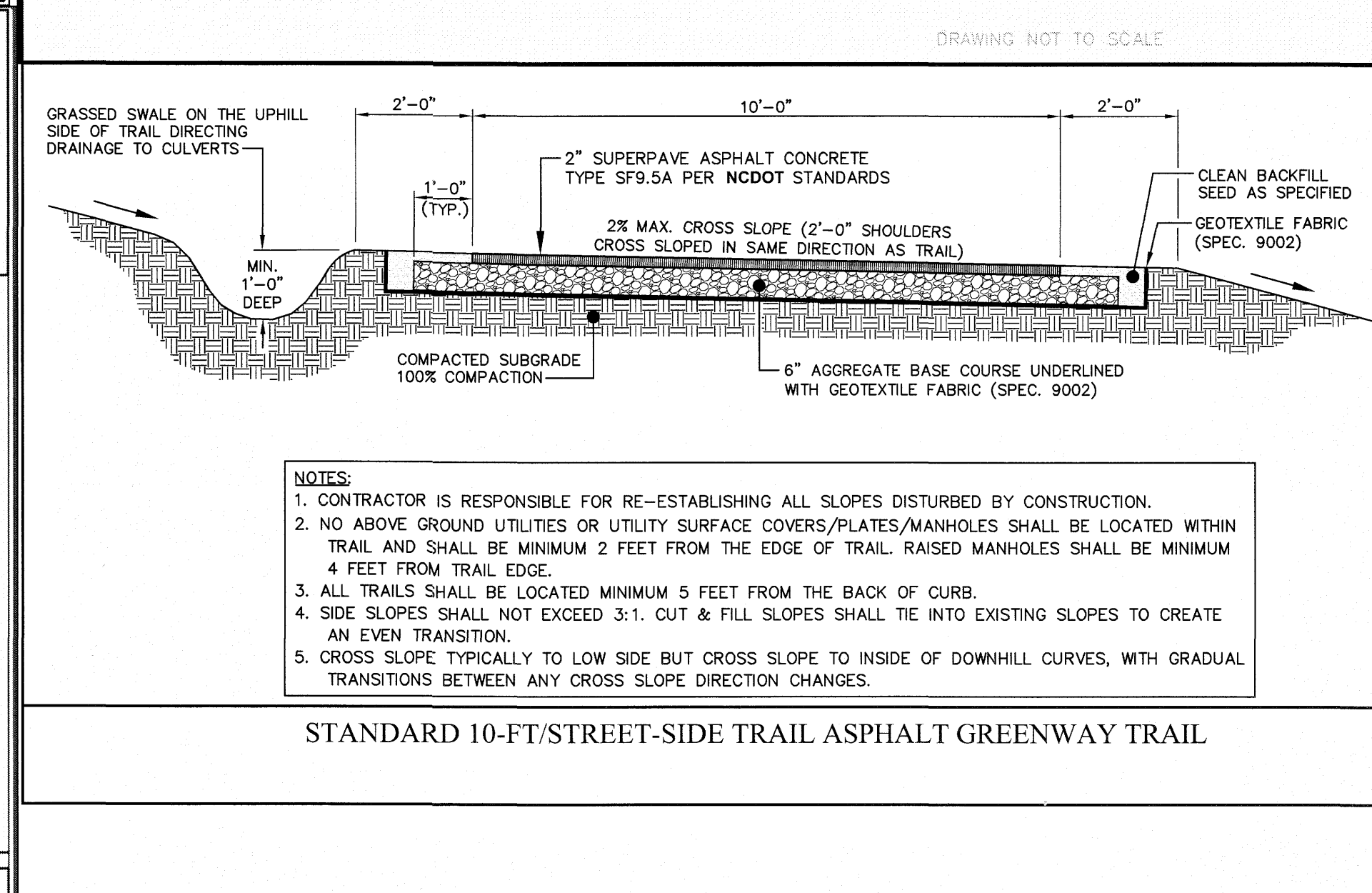
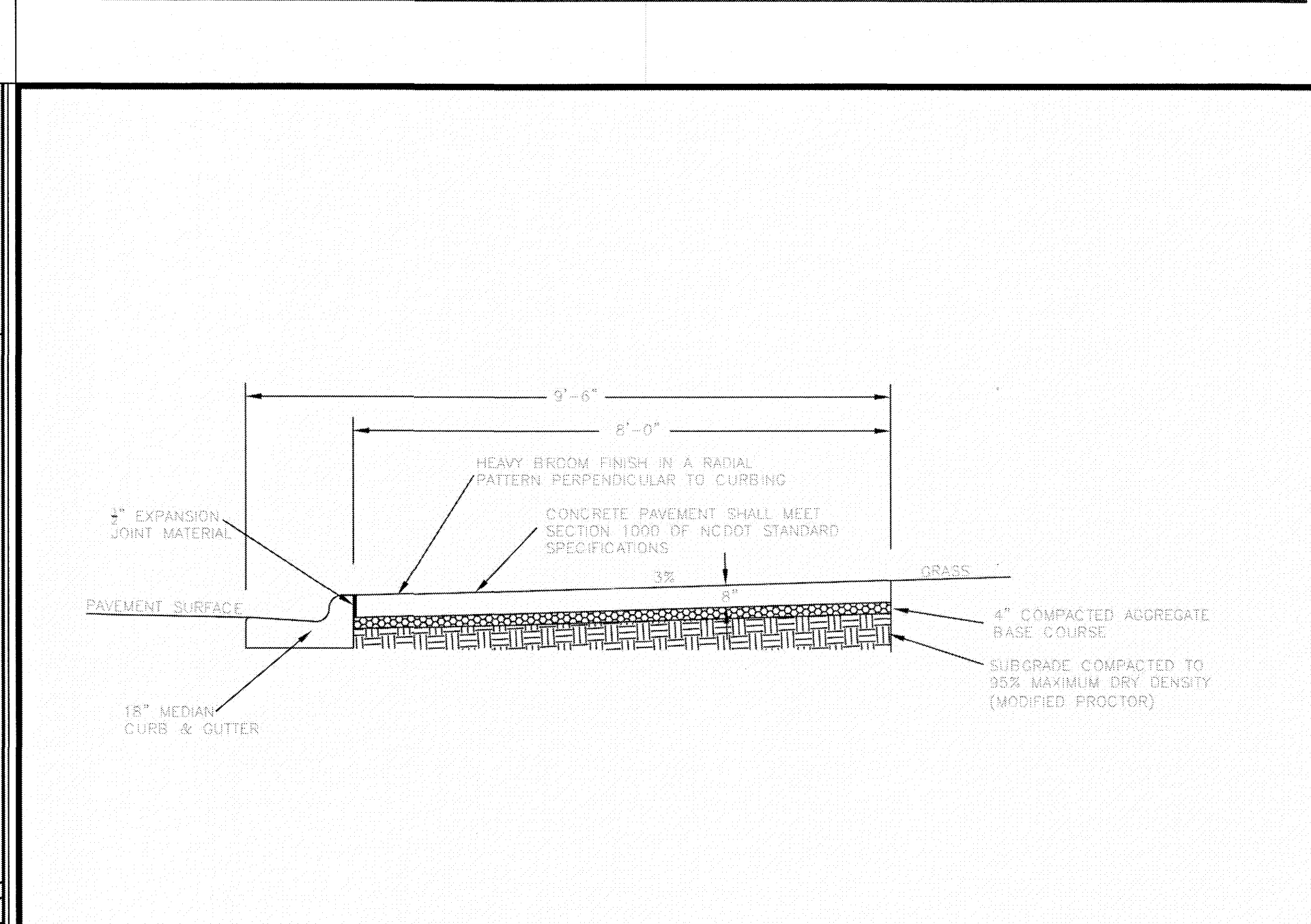
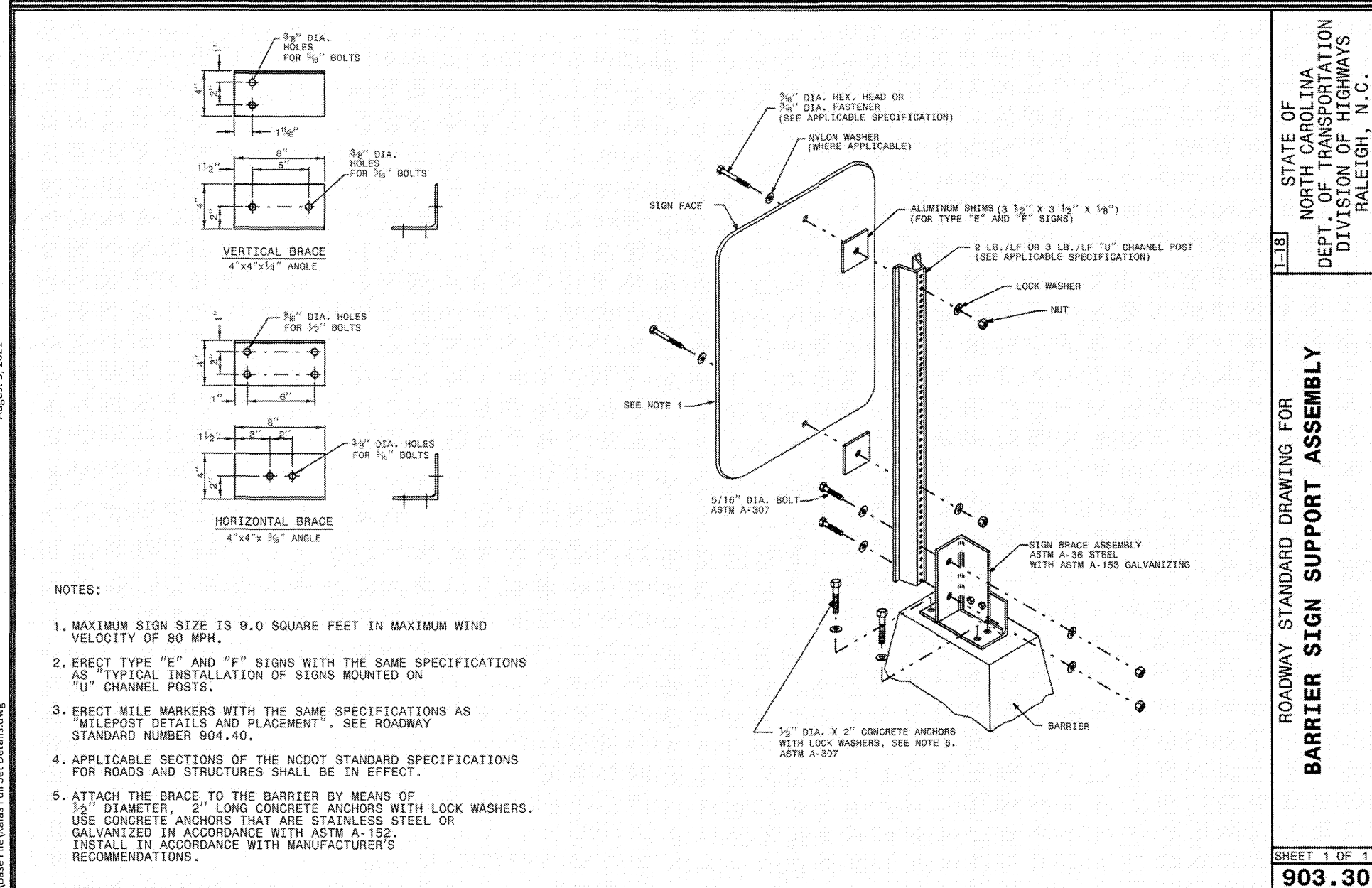
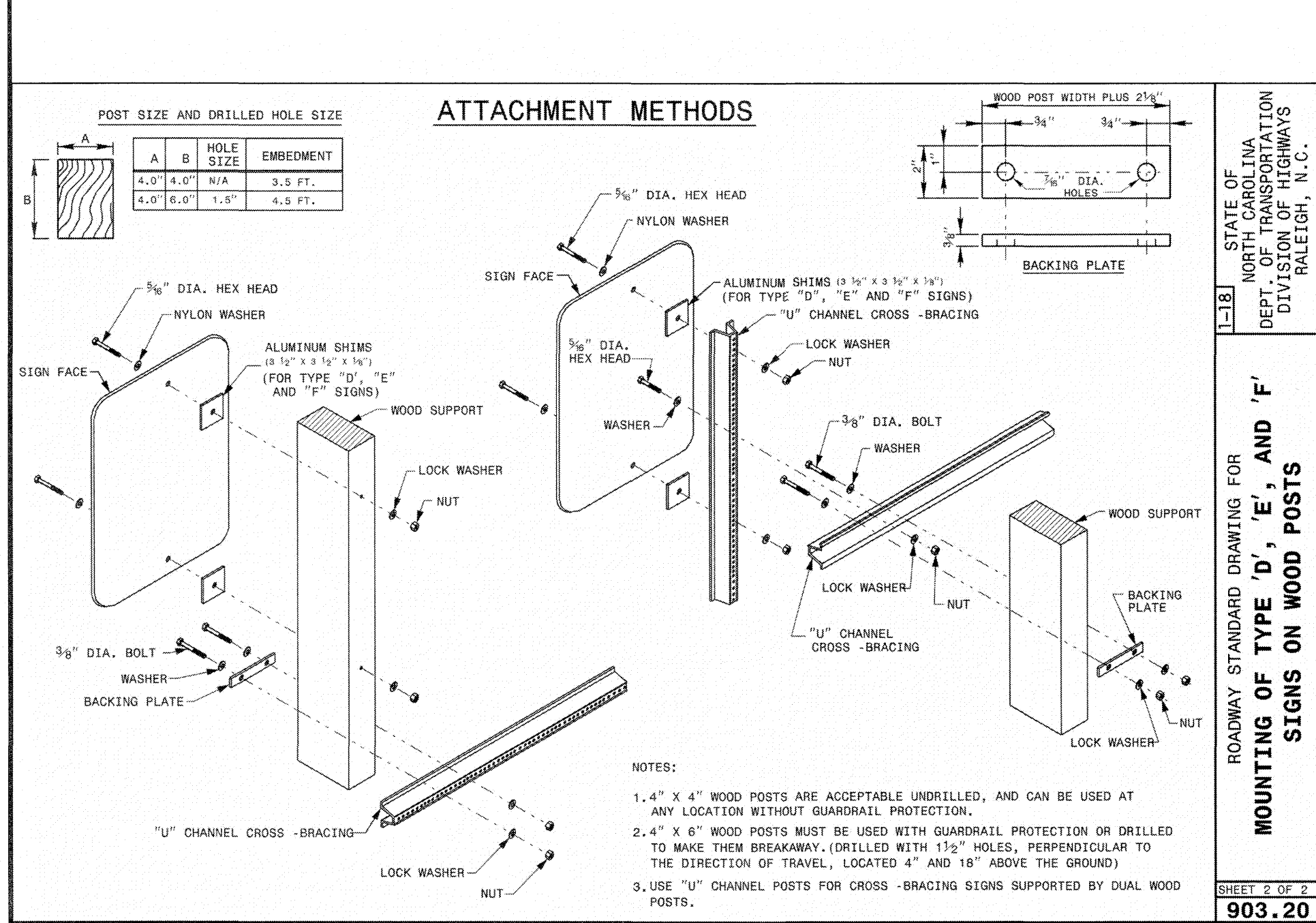
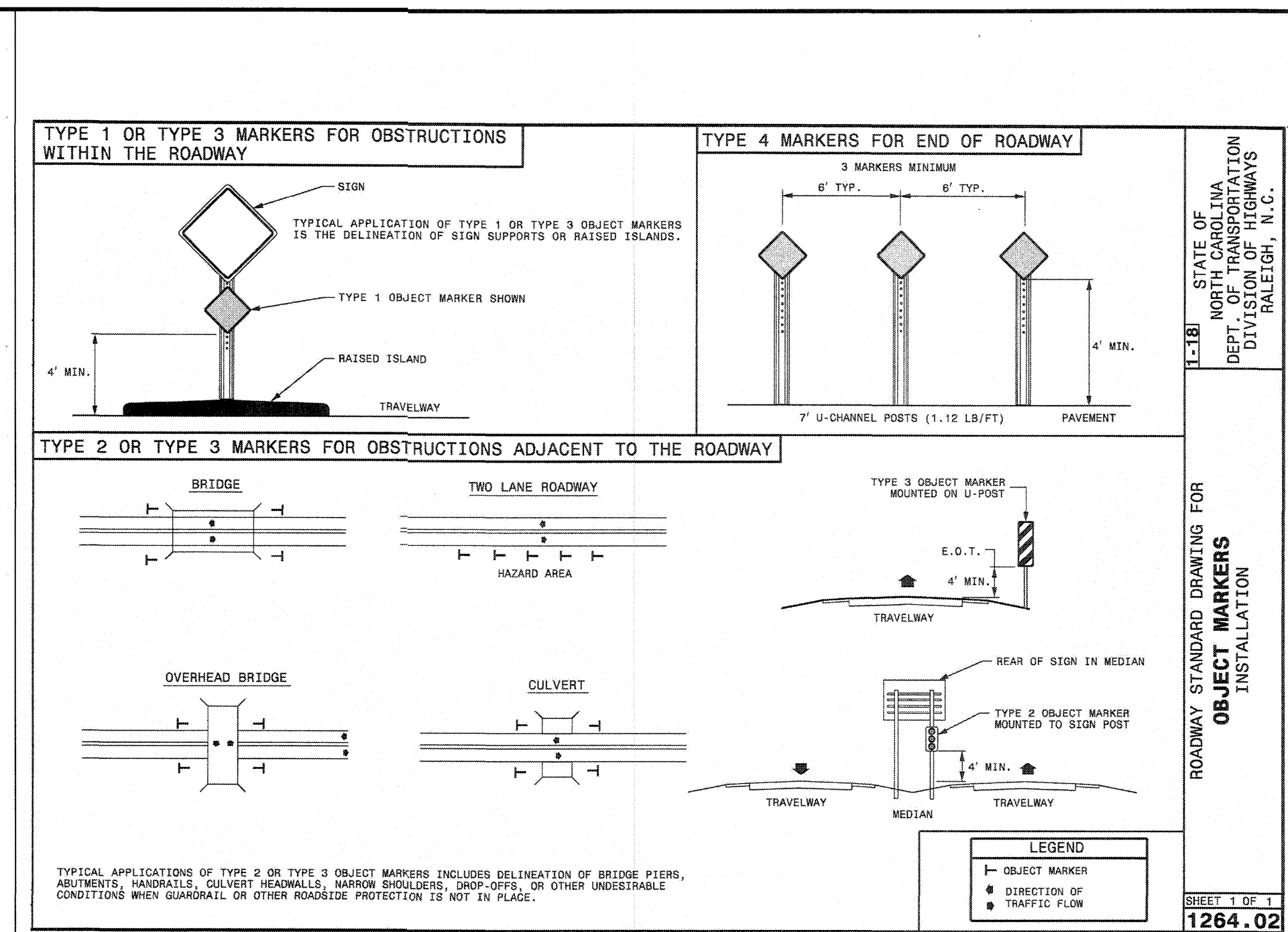
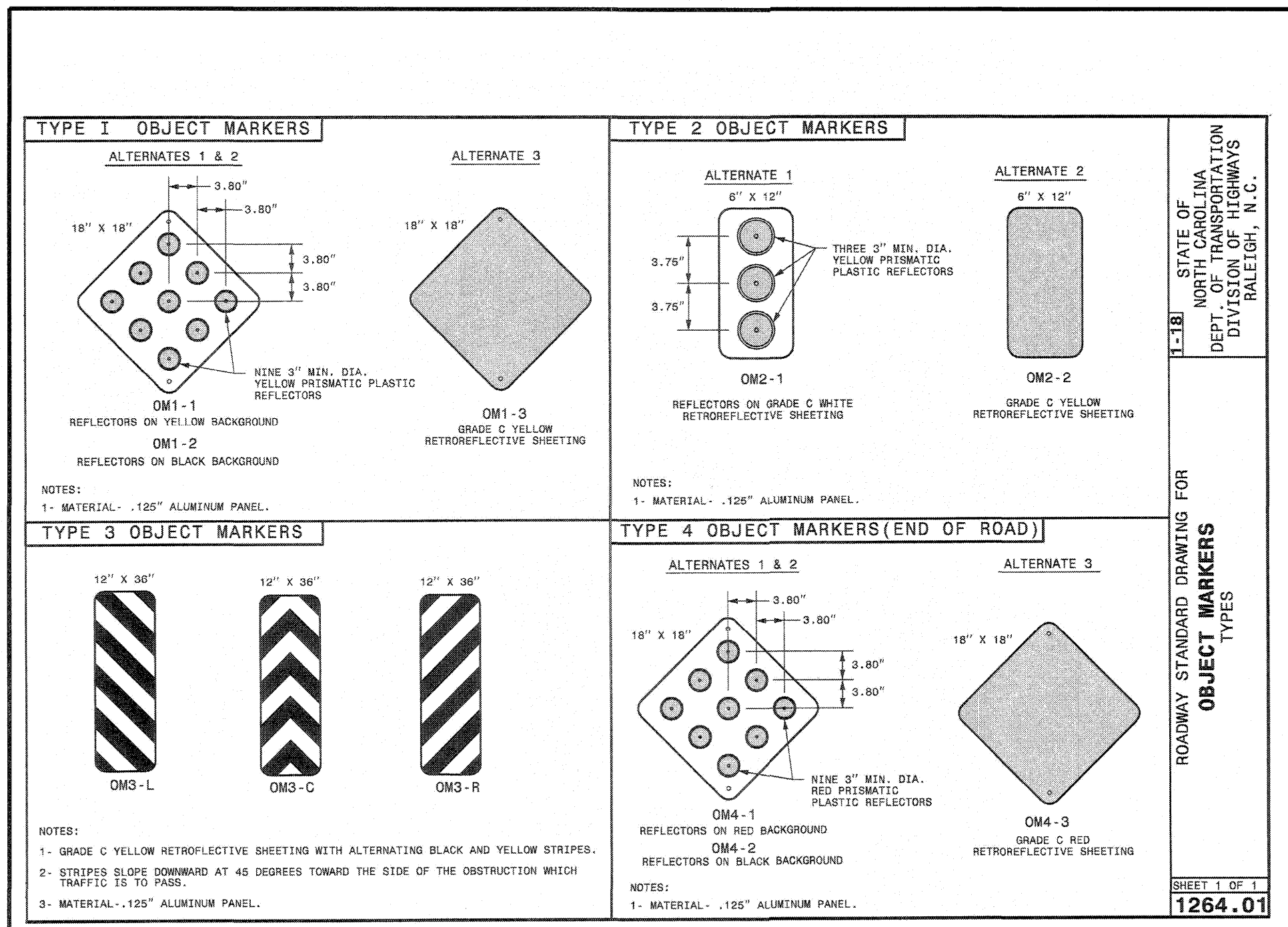
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City of Raleigh Development Approval \_\_\_\_\_

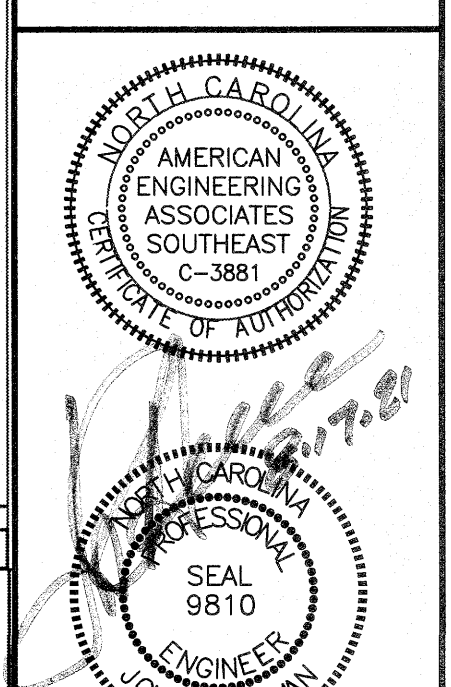
Raleigh Water Review Officer \_\_\_\_\_







**AMERICAN Engineering**  
 American Engineering Associates - Southeast, P.A.  
 1101 South Boulevard, Suite 400  
 Raleigh, NC 27607



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**KALAS FALLS PHASE 3**  
 1832 ROLESVILLE ROAD  
 WAKE COUNTY, NC

JOB NUMBER: 9900  
 CHECKED BY:  
 DRAWN BY:  
 DATE: FEB 18, 2021  
 SHEET TITLE:  
**KALAS FALLS CIVIL DETAILS**

SHEET NO.: CD18

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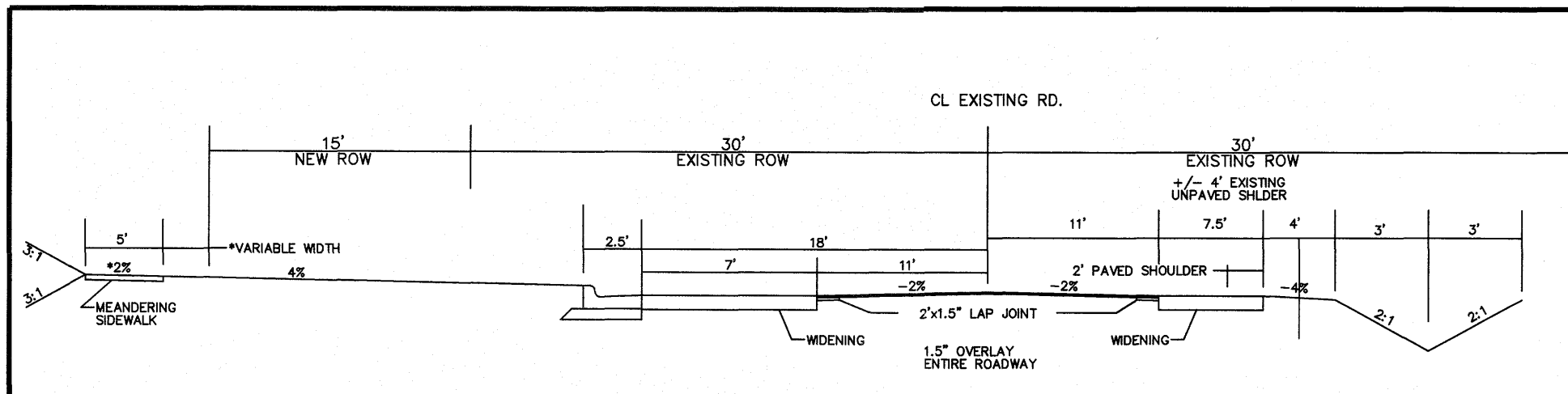
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Raleigh Water Review Officer

North Carolina Professional Engineer Seal 9810

\*\*\* 3 Days Before Digging \*\*\*  
 North Carolina 811  
 811 or 1-800-632-9949  
 Remote Ticket Entry  
 http://ec811.org/remoteticketentry.htm

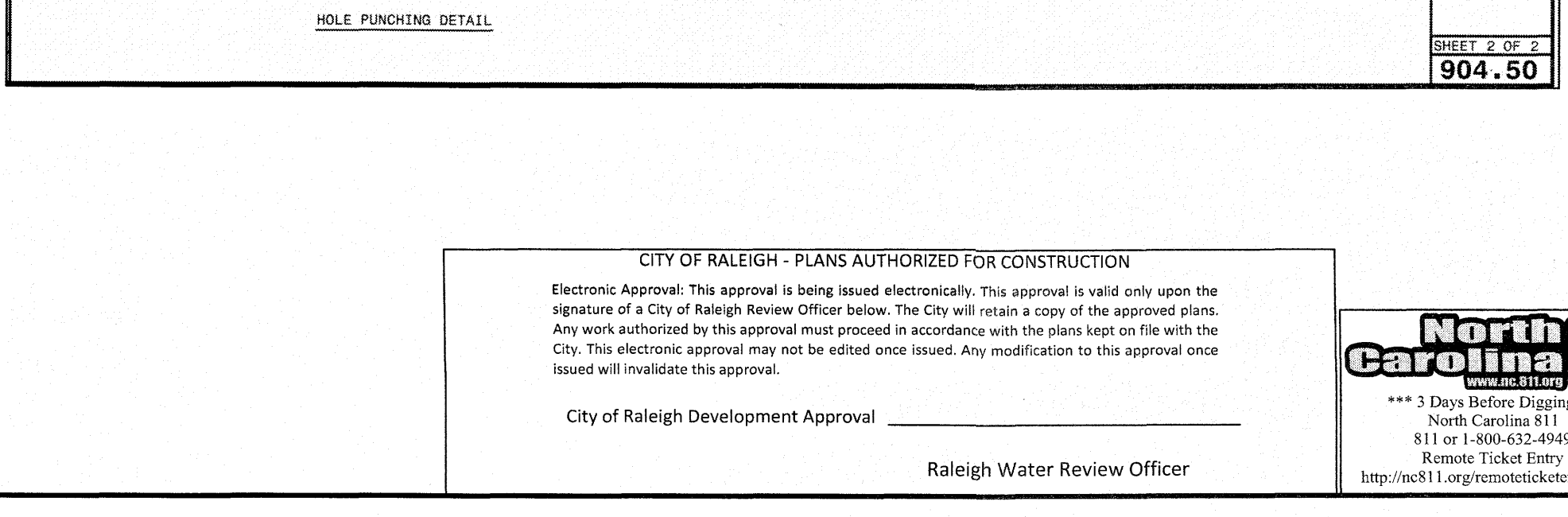
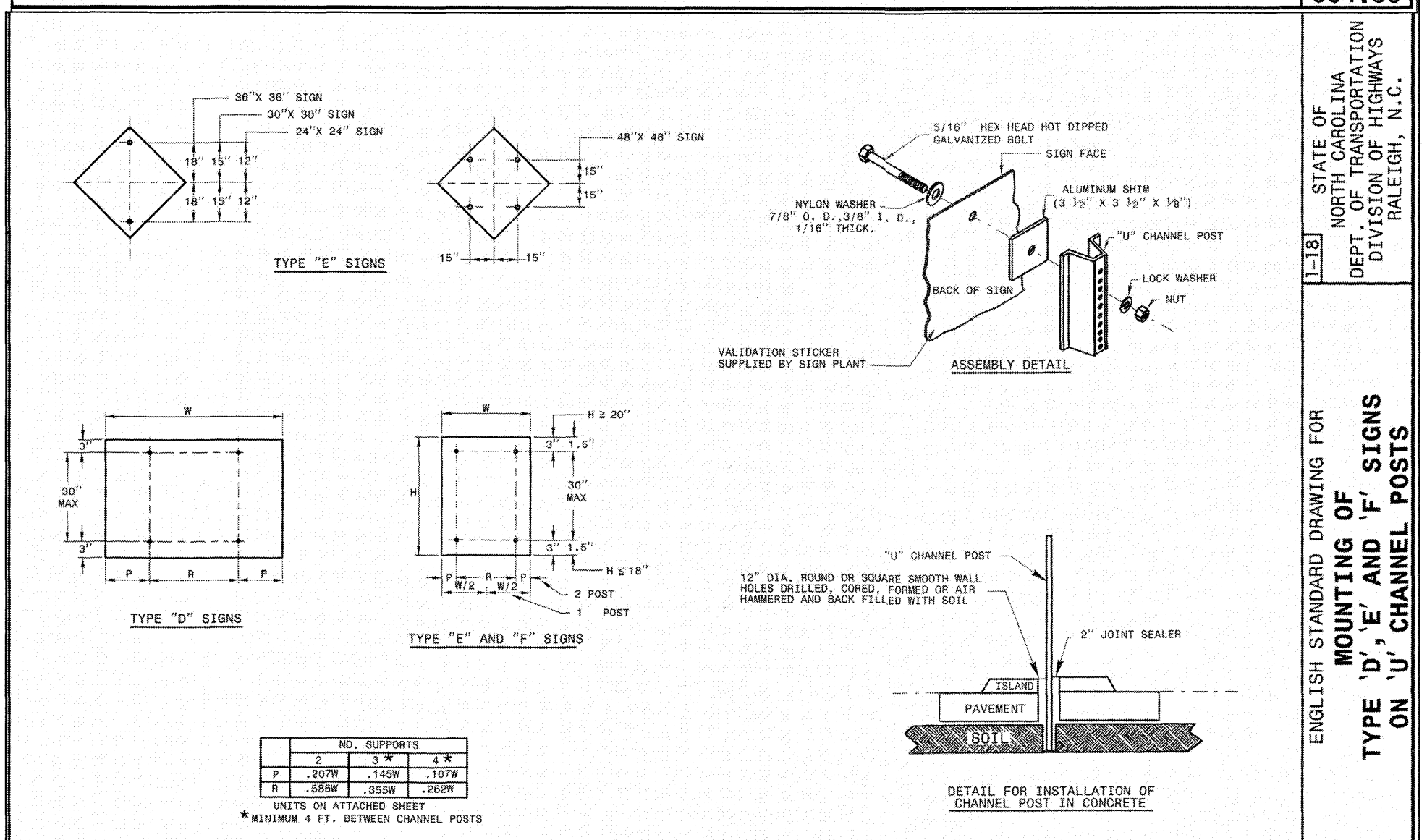
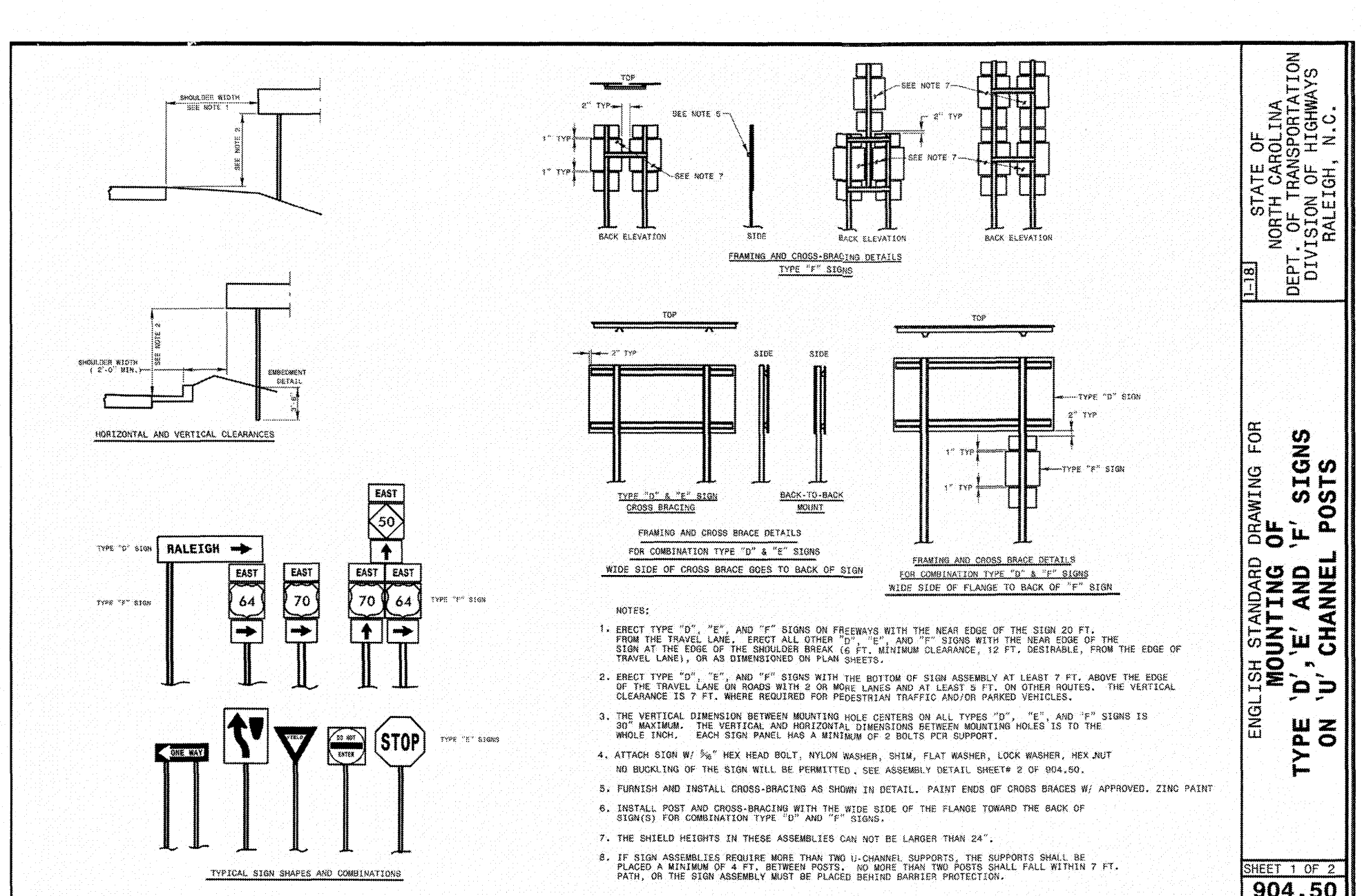
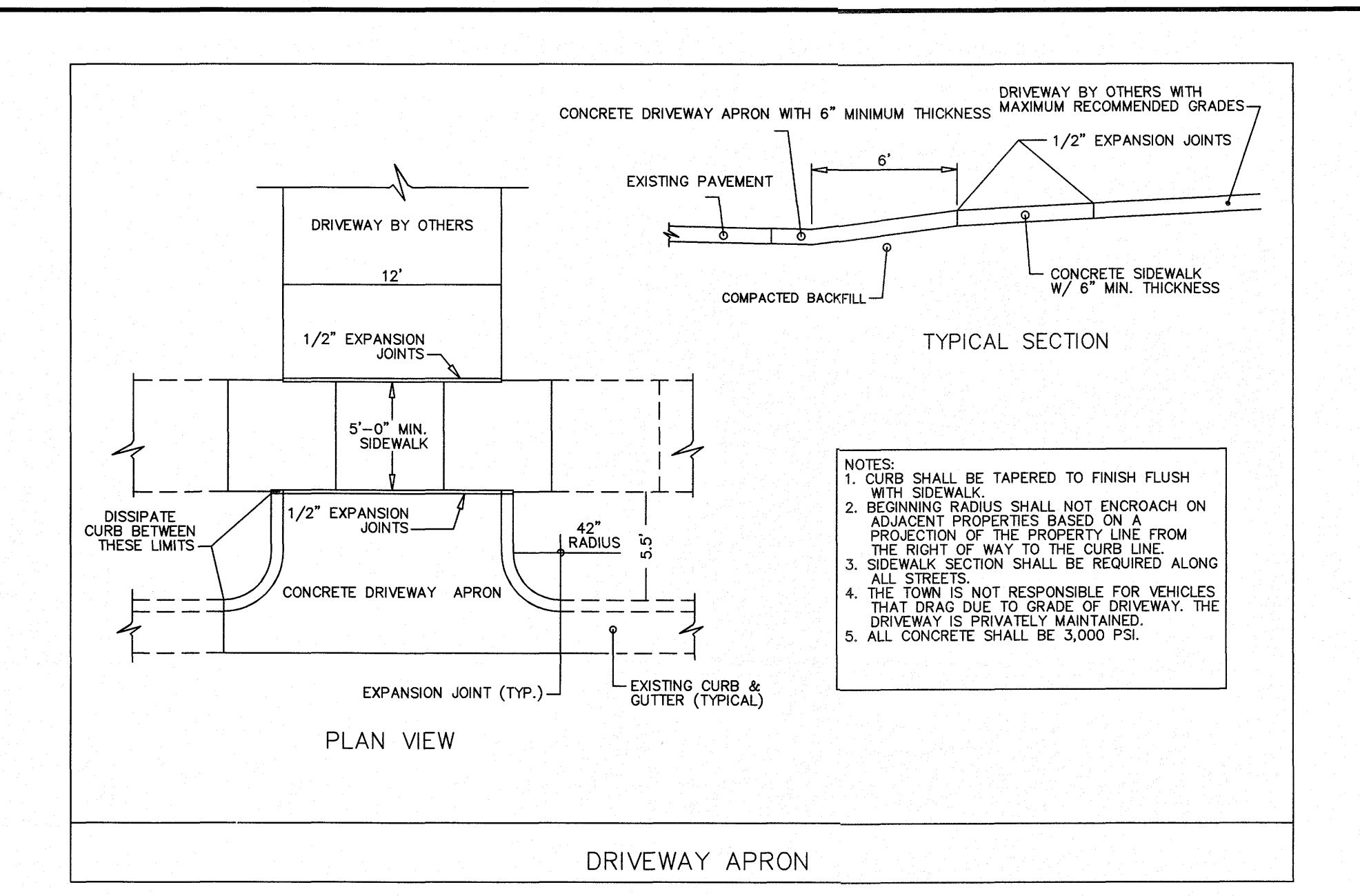
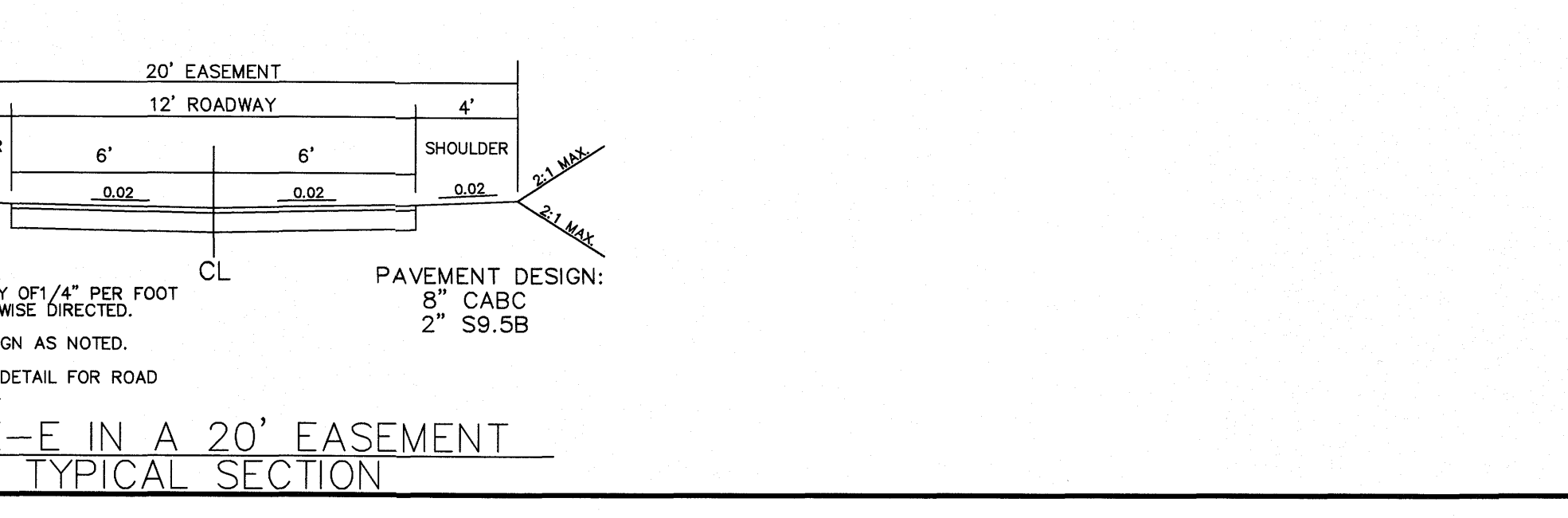
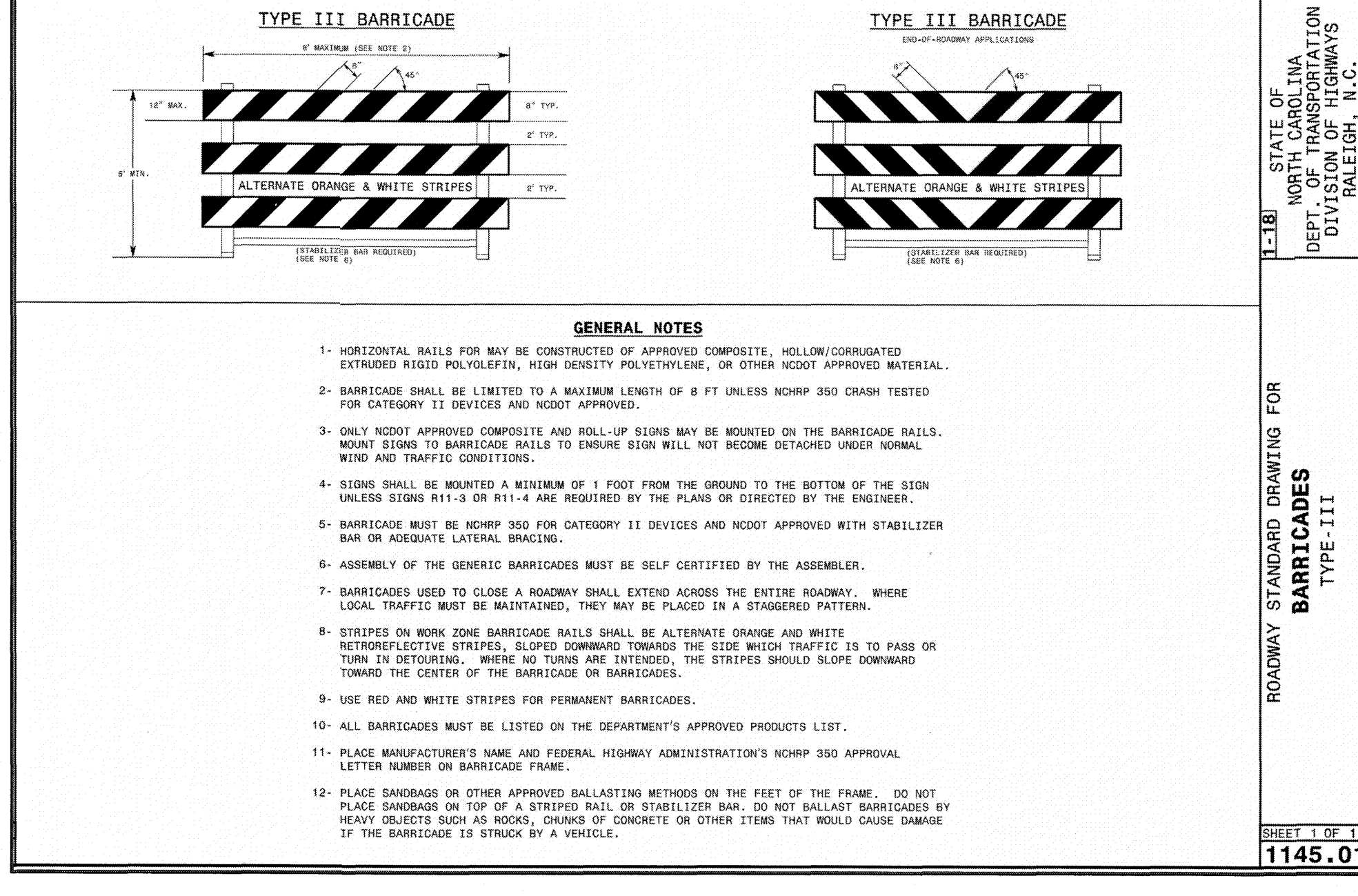
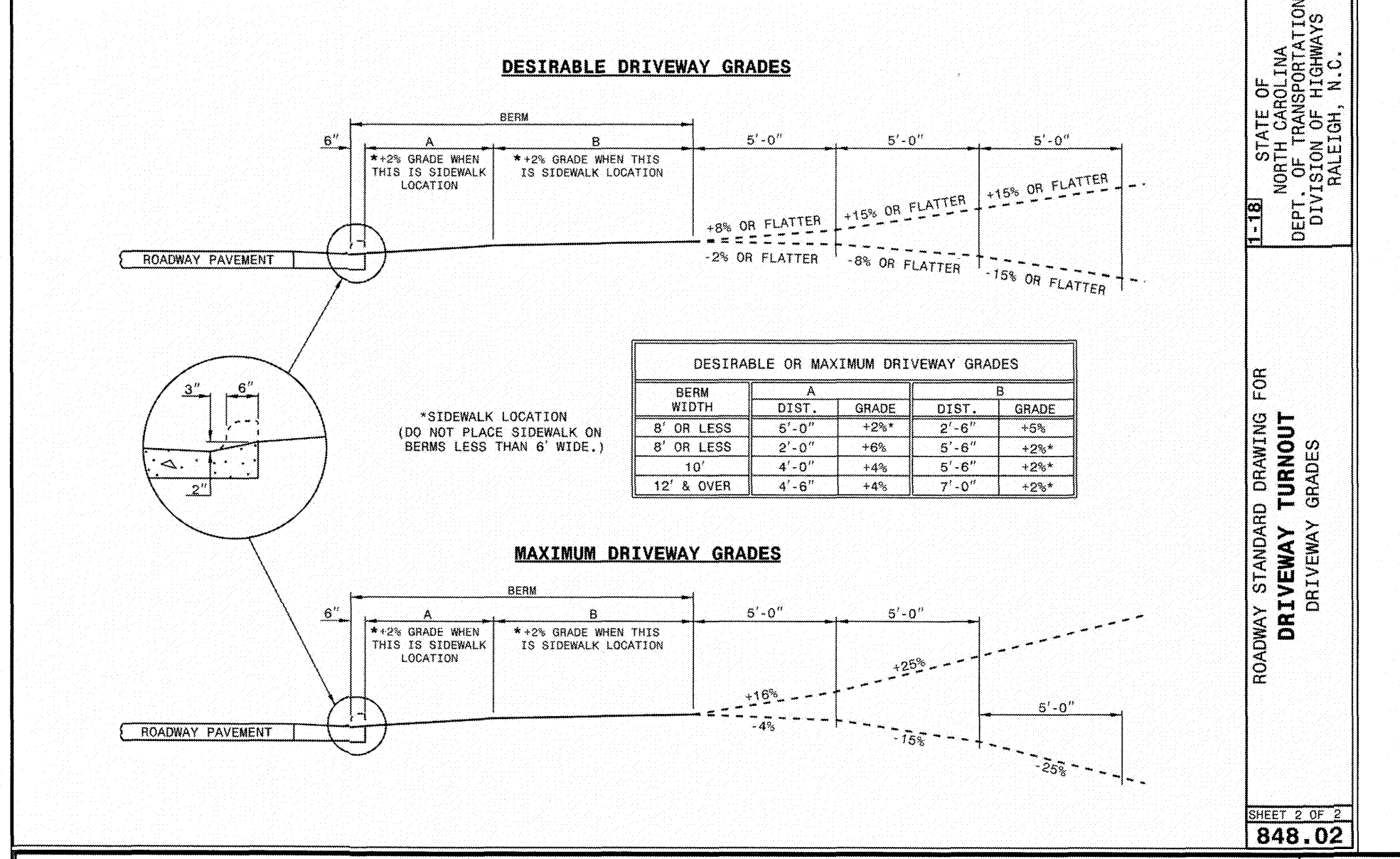
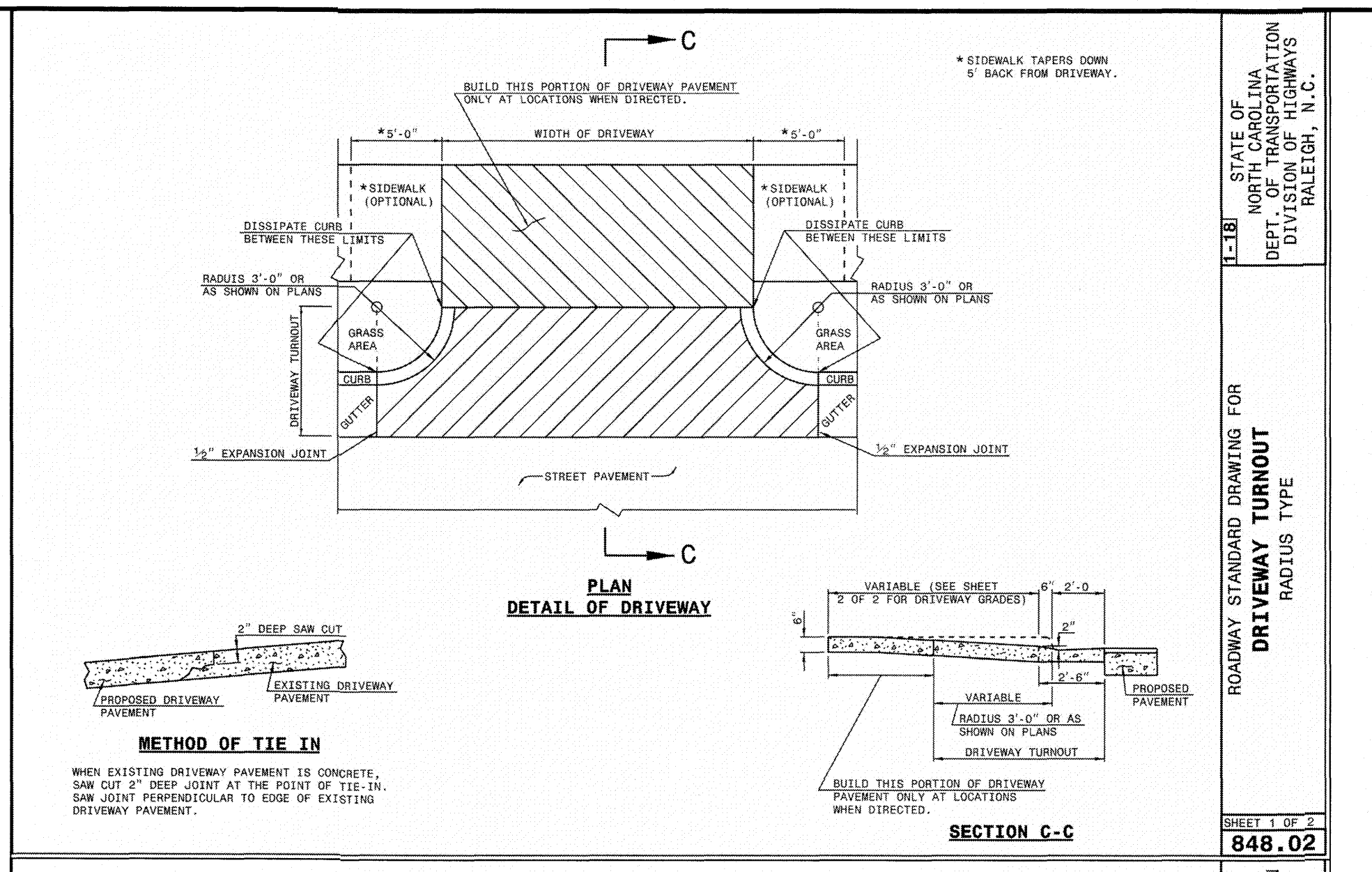
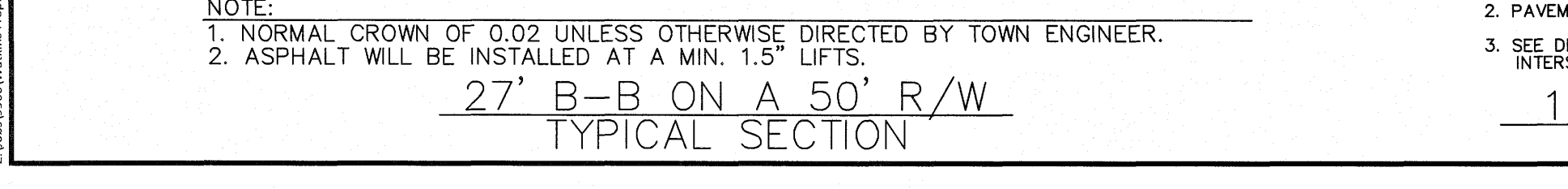
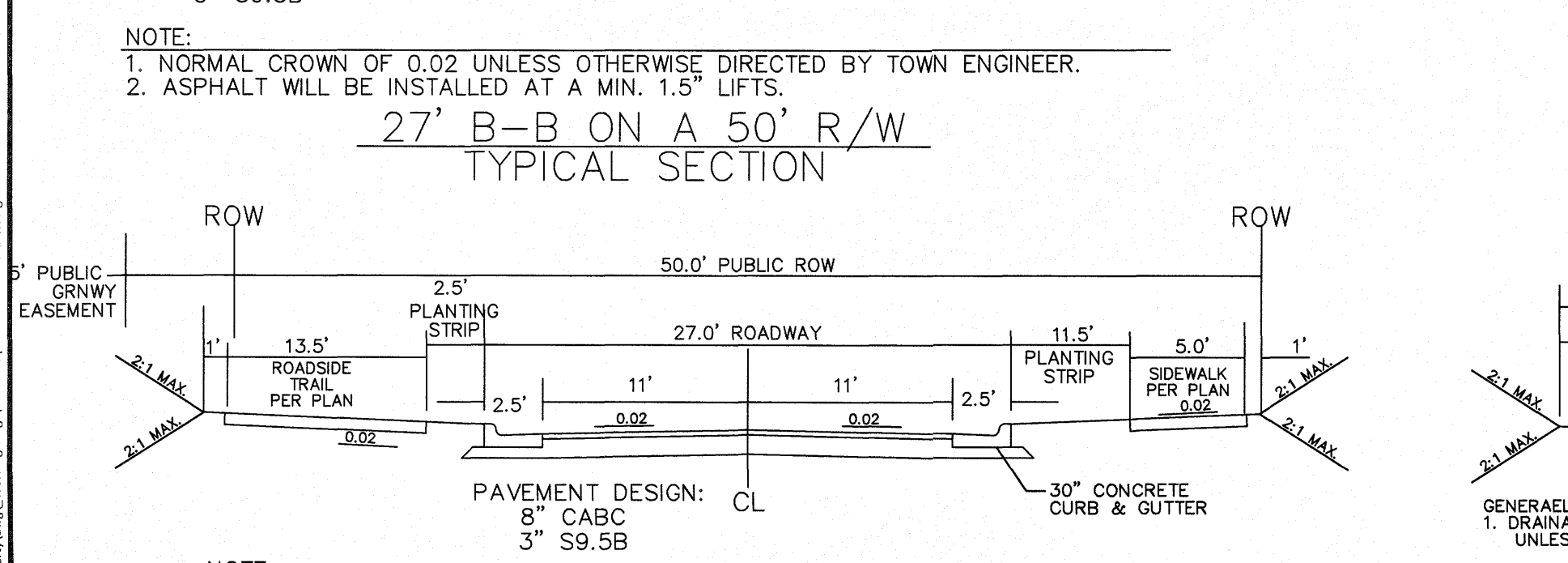
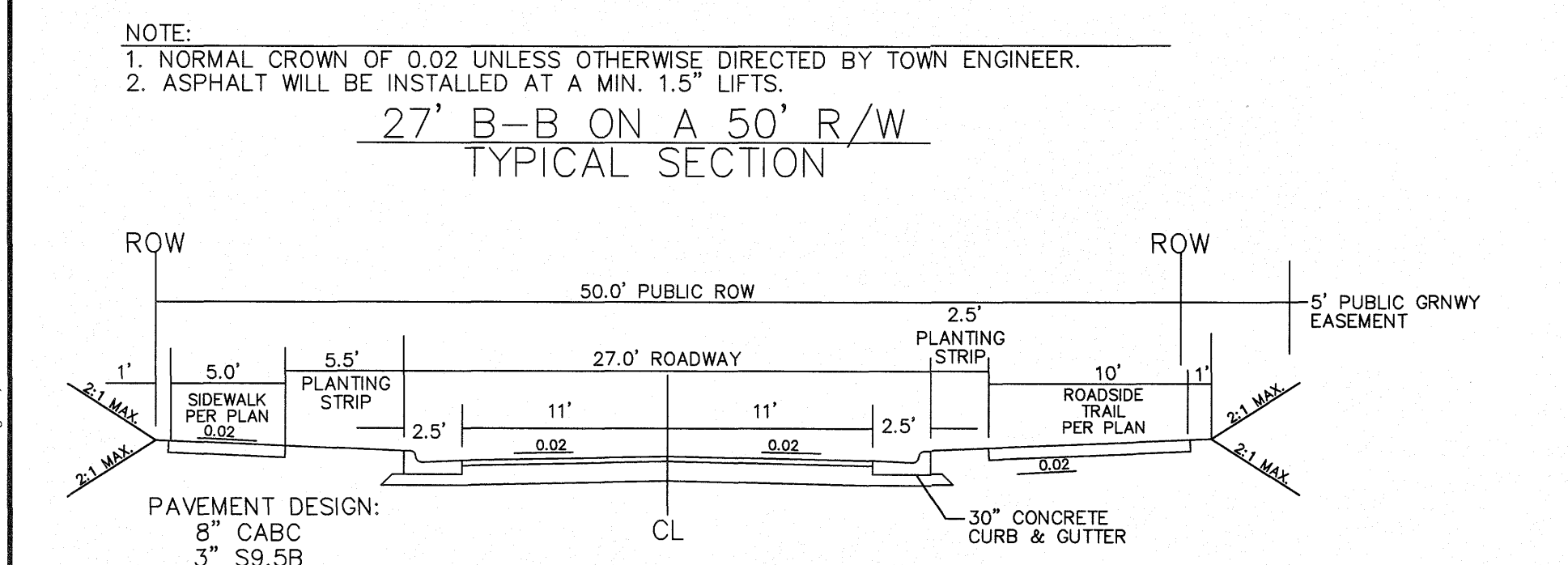
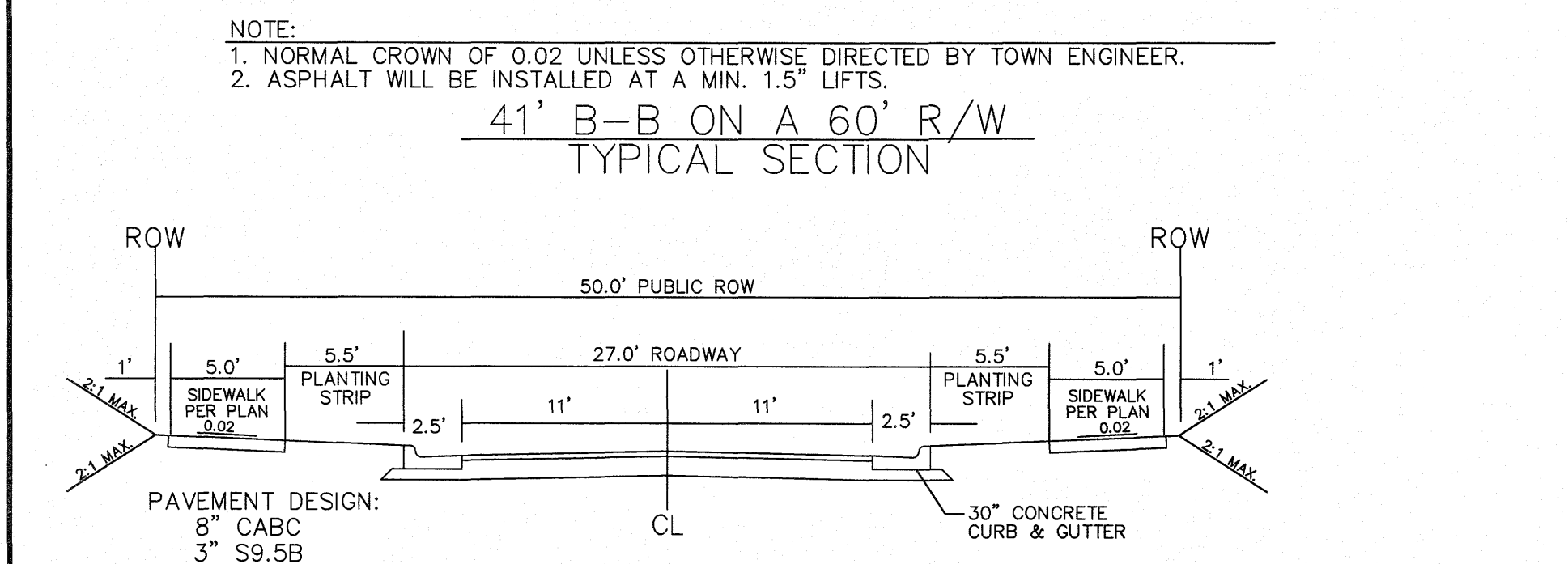
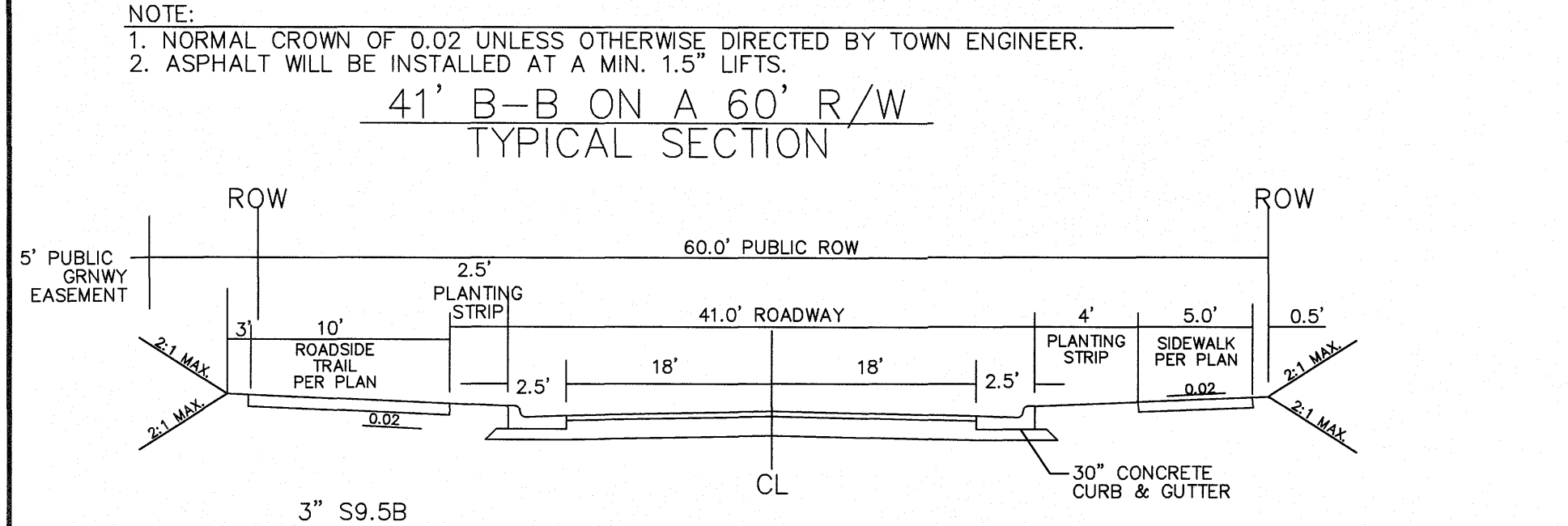
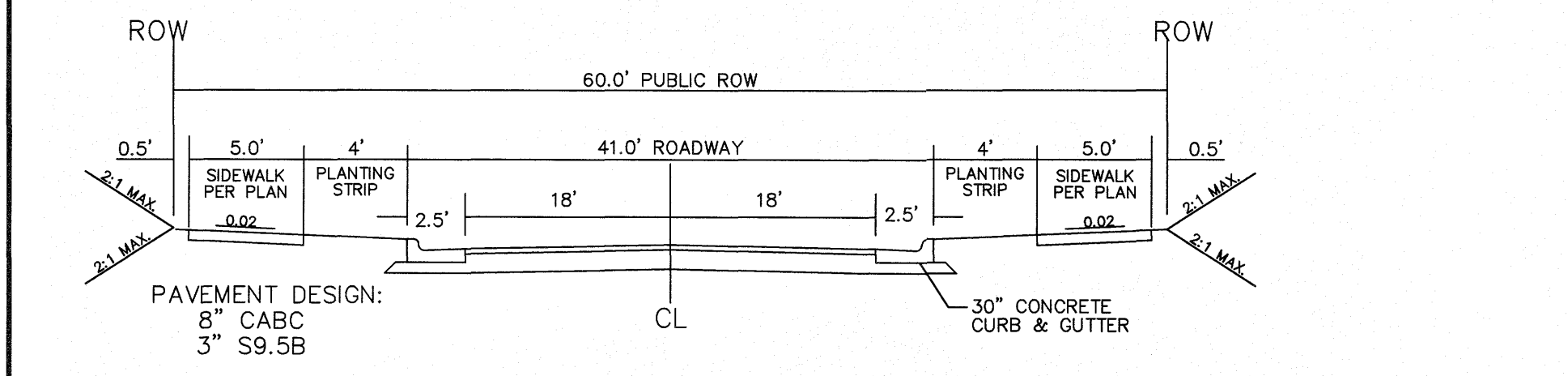




ROLESVILLE RD.  
CROSS-SECTION (TYPICAL)

NOTE: PAVEMENT DESIGN TO BE DESIGNATED BY NCDOT ENCROACHMENT AGREEMENT OVERLAY OR LAP JOINT TO BE DETERMINED BY NCDOT ENCROACHMENT AGREEMENT

PAVEMENT DESIGN 6" OR LESS:	PAVEMENT DESIGN GREATER THAN 6":
3" S9.5C	3" S9.5C
4" I-19C	4" I-19C
5" B25.0C	10" ABC



**AMERICAN**  
Engineering  
American Engineering Associates - Southeast, P.A.  
4020 Westchase Boulevard, Suite 450  
Raleigh, NC 27607

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

AMERICAN ENGINEERING ASSOCIATES  
SOUTHEAST  
C-388

STATE OF NORTH CAROLINA  
PROFESSIONAL ENGINEER  
SEAL 9810  
JOHN R. HERMAN

ENGLISH STANDARD DRAWING FOR MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

SHEET 1 OF 2  
904.50

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KALAS FALLS  
PHASE 3  
1832 ROLESVILLE ROAD  
WAKE COUNTY, NC

JOB NUMBER: 9900  
CHECKED BY:  
DRAWN BY:  
DATE: FEB 18, 2021  
SHEET TITLE:  
KALAS FALLS CIVIL DETAILS  
SHEET NO.:  
CD19

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City of Raleigh Development Approval \_\_\_\_\_

Raleigh Water Review Officer \_\_\_\_\_

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