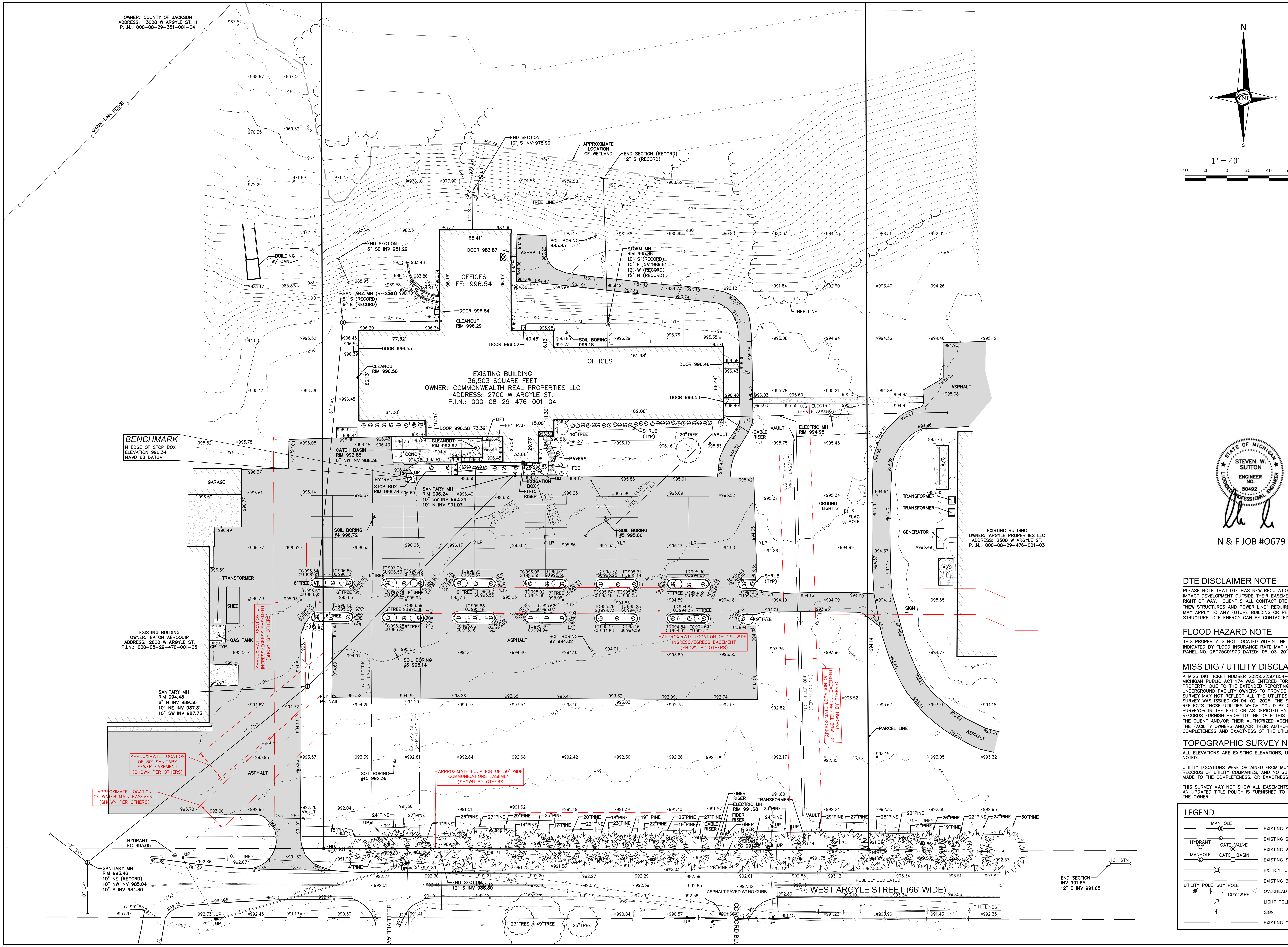

N & F JOB #O679

DTE DISCLAIMER NOTE

PLEASE NOTE THAT DTE HAS NEW REGULATIONS THAT MAY IMPACT DEVELOPMENT OUTSIDE THEIR EASEMENT OR THE PUBLIC RIGHT OF WAY. CLIENT SHALL CONTACT DTE TO DETERMINE THE "NEW STRUCTURES AND POWER LINE" REQUIREMENTS AS THEY MAY APPLY TO ANY FUTURE BUILDING OR RENOVATION OF A STRUCTURE. DTE ENERGY CAN BE CONTACTED AT 800-477-4747

FLOOD HAZARD NOTE

THIS PROPERTY IS NOT LOCATED WITHIN THE FLOOD HAZARD AREA INDICATED BY FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 26075C0190D DATED: 05-03-2010

MISS DIG / UTILITY DISCLAIMER NOTE

A MISS DIG TICKET NUMBER 2025022501804-000, PURSUANT TO MICHIGAN PUBLIC ACT 174 WAS ENTERED FOR THE SURVEYED PROPERTY. DUE TO THE EXTENDED REPORTING PERIOD FOR UNDERGROUND FACILITY OWNERS TO PROVIDE THEIR RECORDS, THE SURVEY MAY NOT REFLECT ALL THE UTILITIES AT THE TIME THE SURVEY WAS ISSUED ON 04-02-2025. THE SURVEY ONLY REFLECTS THOSE UTILITIES WHICH COULD BE OBSERVED BY THE SURVEYOR IN THE FIELD OR AS DEPICTED BY THE UTILITY COMPANY RECORDS FURNISH PRIOR TO THE DATE THIS SURVEY WAS ISSUED. THE CLIENT AND/OR THEIR AUTHORIZED AGENT SHALL VERIFY WITH THE FACILITY OWNERS AND/OR THEIR AUTHORIZED AGENTS, THE COMPLETENESS AND EXACTNESS OF THE UTILITIES LOCATION.

TOPOGRAPHIC SURVEY NOTES

ALL ELEVATIONS ARE EXISTING ELEVATIONS, UNLESS OTHERWISE NOTED.

UTILITY LOCATIONS WERE OBTAINED FROM MUNICIPAL OFFICIALS AND RECORDS OF UTILITY COMPANIES, AND NO GUARANTEE CAN BE MADE TO THE COMPLETENESS, OR EXACTNESS OF LOCATION.

THIS SURVEY MAY NOT SHOW ALL EASEMENTS OF RECORD UNLESS AN UPDATED TITLE POLICY IS FURNISHED TO THE SURVEYOR BY THE OWNER.

LEGEND

- MANHOLE — EXISTING SANITARY SEWER
- EXISTING SAN. CLEAN OUT
- HYDRANT, GATE VALVE — EXISTING WATER MAIN
- MANHOLE, CATCH BASIN — EXISTING STORM SEWER
- EX. R.Y. CATCH BASIN
- EXISTING BURIED CABLES
- UTILITY POLE, GUY POLE, GUY WIRE — OVERHEAD LINES
- LIGHT POLE
- SIGN
- EXISTING GAS MAIN

STATE OF MICHIGAN
LICENSED PROFESSIONAL ENGINEER
STEVEN W. SUTTON
ENGINEER NO. 50492

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LAND PLANNERS

46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

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DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

DATE	Review
2026-01-15	Bid Documents
2025-10-01	Site Plan (100%)
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)

PROJECT DESCRIPTION

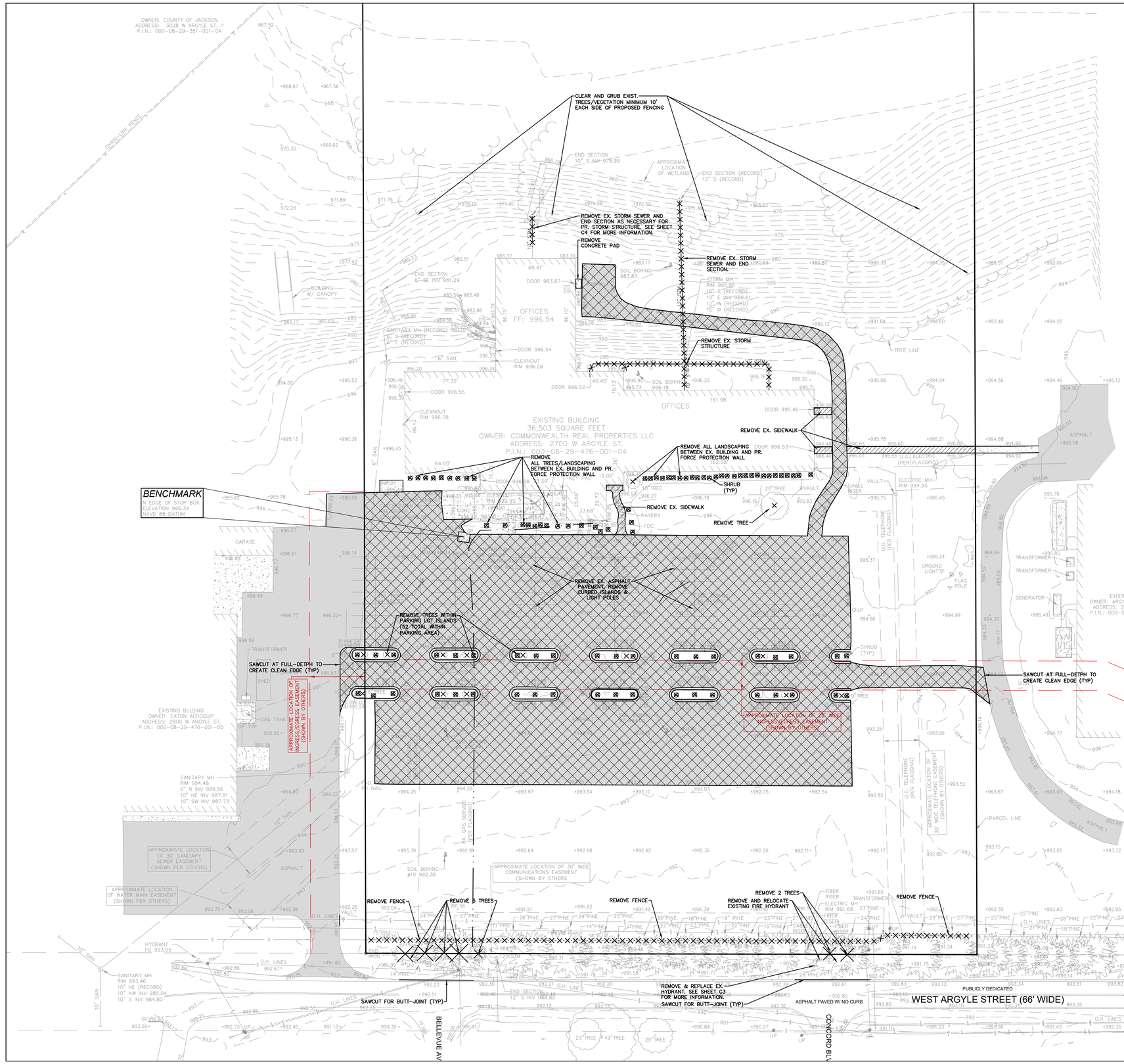
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT

2700 W Argyle Street, Jackson, MI 49202

TOPOGRAPHICAL SURVEY

DMVA PROJECT #	
DTMB PROJECT #	511/25039
ARCH PROJECT #	154601
DRAWN BY	OT
DESIGNED BY	
JC/ENG BY	SS

C1



CLEARING LIMITS

THE CONTRACTOR SHALL ANTICIPATE CLEARING AND GRUBBING TO INCLUDE AT A MINIMUM, TO A DISTANCE OF 82' AROUND THE PERIMETER OF THE NEW/EXISTING BUILDINGS FOR PROPOSED SITE AND BUILDING IMPROVEMENTS.

REMOVAL LEGEND

- INDICATES AREAS OF ASPHALT PAVEMENT TO BE REMOVED
- INDICATES AREAS OF CONCRETE PAVEMENT/ SIDEWALK TO BE REMOVED

LEGEND

- MANHOLE
- HYDRANT
- GATE VALVE
- MANHOLE CATCH BASIN
- UTILITY POLE GUY POLE
- GUY WIRE
- LIGHT POLE
- SIGN
- 12" MAPLE
- EXISTING SANITARY SEWER
- EXISTING SAN. CLEAN OUT
- EXISTING WATER MAIN
- EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- EXISTING BURIED CABLES
- OVERHEAD LINES
- EXISTING GAS MAIN
- EXISTING UTILITY TO BE REMOVED
- EXISTING UTILITY TO BE ABANDONED
- CONSTRUCTION/TREE PROTECTION FENCING
- INDICATES EXISTING TREE TO BE REMOVED

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LAND SURVEYORS
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46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
TEL: (248) 332-7931
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ADAM P. LACH, RA, DIRECTOR

DATE	Review
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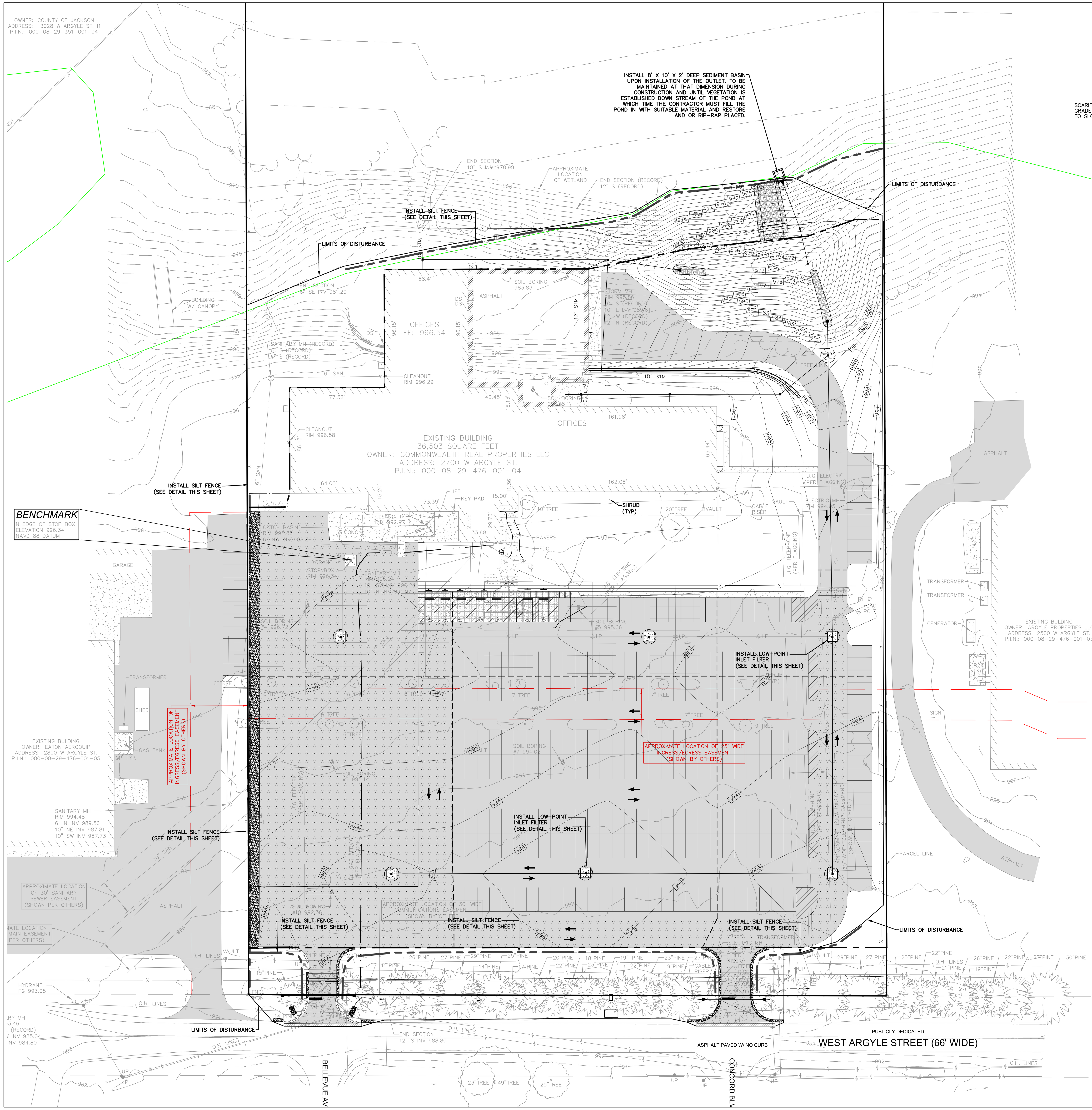
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)

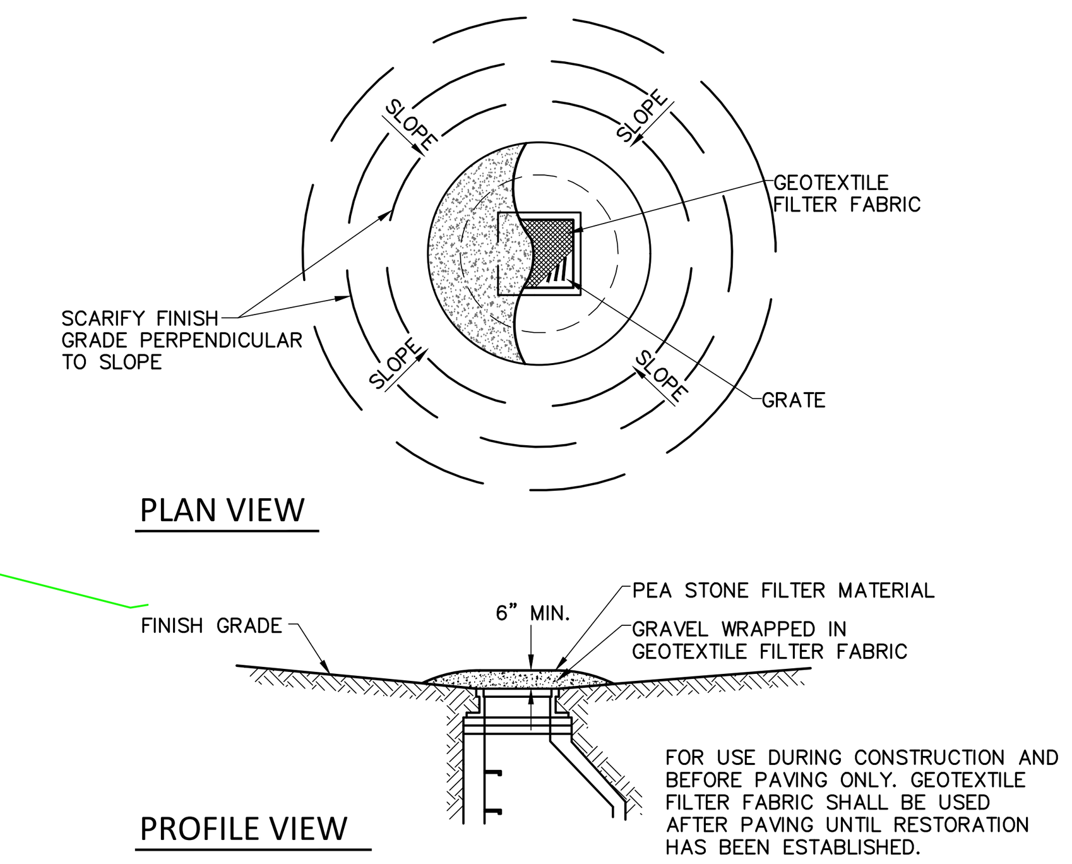
PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

DEMOLITION PLAN

DMVA PROJECT #	51129039
DTMB PROJECT #	154501
ARCH PROJECT #	EO
DRAWN BY	MW
DESIGNED BY	SS
JC/ENG BY	

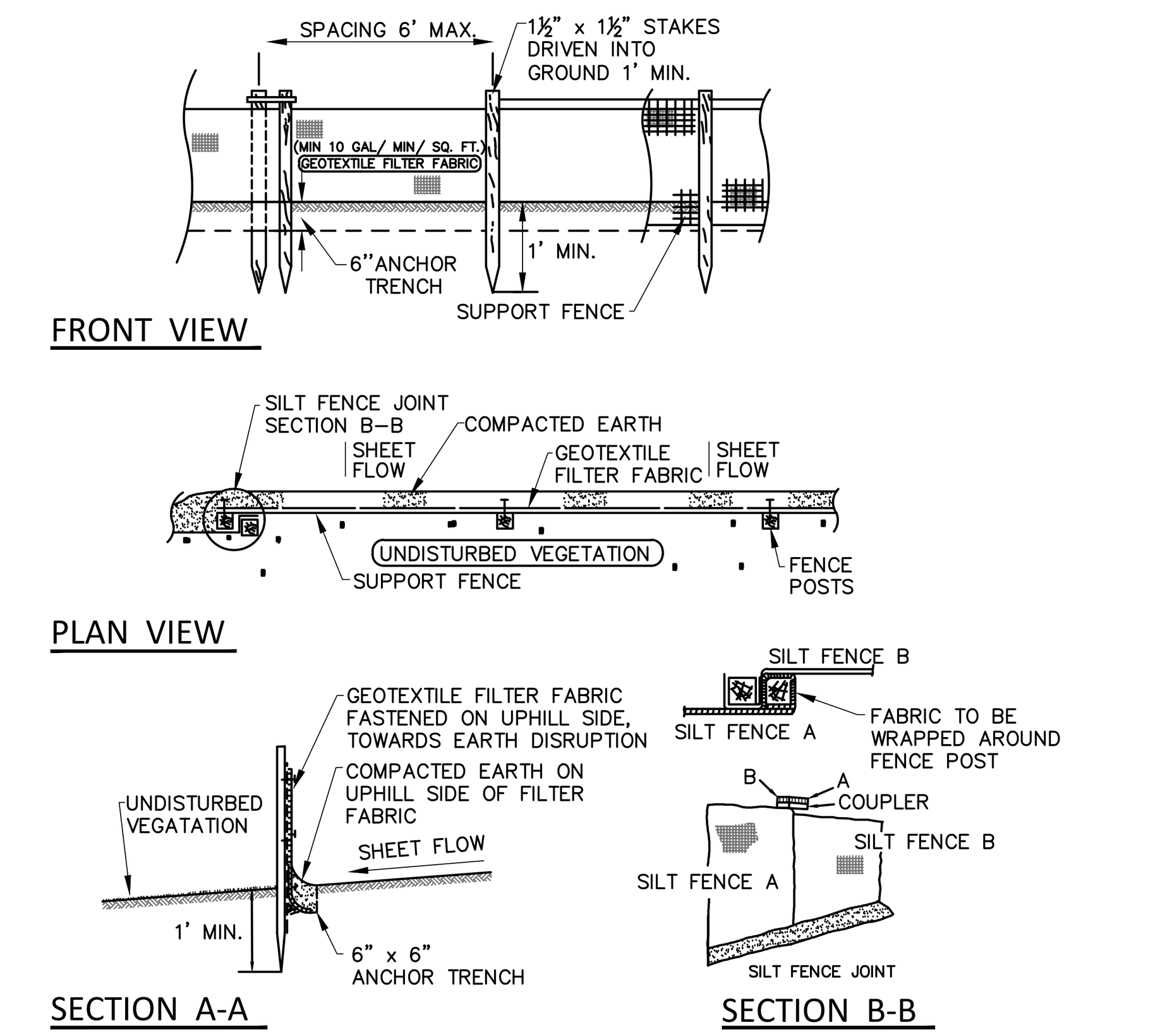
C2





LOW POINT INLET FILTER

N.T.S.



SILT FENCE DETAIL

N.T.S.

1" = 40'

STREET CLEANING SCHEDULE (MINIMUM REQUIREMENT)

TASKS	SUN	MON	TUE	WED	THU	FRI	SAT
SCRAPE STREETS	X	X	X	X	X	X	X
SWEEP STREETS				X			

SOIL EROSION CONTROL SEQUENCE

CONSTRUCTION EVENTS (2026)	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1. INSTALL SILT FABRIC FENCING	▬							
2. CONDUCT DEMOLITION AND SITE CLEARING AS REQUIRED PER PLAN.	▬	▬						
3. STRIP AND STOCK PILE OR REMOVE TOPSOIL PER PLAN. PROTECT STOCK PILES FROM WIND/EROSION WITH COVERINGS OR SIMILAR		▬						
4. COMMENCE GRADING OF SITE.		▬	▬					
5. INSTALL DETENTION & SEDIMENTATION BASINS AS REQUIRED PER PLAN AND SOD.			▬					
6. COMMENCE UNDERGROUND UTILITY INSTALLATIONS.			▬					
7. INSTALL INLET FILTERS ON PROPOSED DRAINAGE INLET STRUCTURES PER PLAN.			▬	▬				
8. FILL IN TEMPORARY SEDIMENTATION TRAPS AND PAVE SITE.				▬				
9. COMPLETE ALL BUILDING CONSTRUCTION, LANDSCAPE ACTIVITY AND SITE RESTORATION.				▬	▬			
10. JET VAC NEW STORM SEWER SYSTEM AS REQUIRED.				▬	▬			
11. REMOVE ALL TEMPORARY SOIL EROSION MEASURES.					▬	▬		

NOTES

PURSUANT TO PART 91 OF 1994 PA 451, SOIL EROSION AND SEDIMENTATION CONTROL (SESC), AS AMENDED, THE DMVA HAS ESTABLISHED SESC PROCEDURES TO PROVIDE "EFFECTIVE SOIL EROSION AND SEDIMENTATION CONTROL, INSPECTION, ENFORCEMENT AND SEDIMENT POLLUTION ABATEMENT OR PREVENTION". AS AN AUTHORIZED PUBLIC AGENCY (APA), THE DMVA IS RESPONSIBLE FOR CONTROLLING EROSION AND OFFSITE SEDIMENTATION ON THE DMVA CONSTRUCTION PROJECTS, AND FROM APPLICABLE MILITARY CONSTRUCTION TRAINING ACTIVITIES AT DMVA FACILITIES. THIS RESPONSIBILITY CANNOT BE TRANSFERRED TO THE DESIGNER OR CONTRACTOR. HOWEVER, THEIR CONTRACTS (AND AGREEMENTS WITH OTHER MILITARY ENTITIES) CAN INCLUDE PENALTIES FOR NON-COMPLIANCE WITH SESC PROVISIONS THAT ARE INCLUDED IN THE CONTRACT DOCUMENTS. TO ASSIST DMVA'S CONSTRUCTION & FACILITIES MANAGEMENT OFFICE (CFMO) WITH ENSURING COMPLIANCE WITH PART 91 OF 1994 PA451, A SESC PROGRAM HAS BEEN ESTABLISHED. THE SESC PROGRAM INCORPORATES DMVA STAFF AND THE PROCEDURES IN THIS GUIDEBOOK FOR THE CONTROL OF EROSION AND SEDIMENTATION. THE SESC PROGRAM FUNCTIONS INDEPENDENT OF THE CONSTRUCTION INSPECTION SERVICES BEING PROVIDED BY THE CFMO."

THE DMVA, AS APA, CAN ISSUE UP TO $500 PER DAY PLUS ASSESSMENT OF ACTUAL DAMAGE COSTS FOR FAILURE TO IMPLEMENT THE SESC DESIGN AND CONSTRUCTION CONTRACTOR PREPARED AND APPROVED SESC IMPLEMENTATION PLAN. THE FINES AND FEES ARE FOR WHEN AN CONTRACTOR REFUSES TO COMPLY WITH SESC REQUIREMENTS AND CORRECTIVE MEASURES CONTAINED IN THE CONSTRUCTION CONTRACT. FOR BONDED PROJECTS, THE SURETY COMPANY SHALL BE HELD RESPONSIBLE FOR THE COSTS IN THE EVENT THE CONTRACTOR REFUSES TO PERFORM OR IS FOUND IN DEFAULT.

CONTRACTORS SHALL ENSURE THEIR BID INCLUDES 1) CONSTRUCTION SEQUENCING FOR SESC 2) INSTALLATION, MAINTENANCE, AND REMOVAL OF TEMPORARY SESC CONTROL MEASURES AND 3) INSTALLATION AND MAINTENANCE OF PERMANENT SESC CONTROL MEASURES IF APPLICABLE.

NOTES

REFER TO THE WRC SOIL EROSION AND SEDIMENTATION CONTROL DETAIL SHEET FOR ALL ADDITIONAL NOTES & DETAILS (TYP)

A DISTANCE OF APPROX. 250 FEET TO COUNTY DRAIN (NORTH).

THE TOTAL AREA OF EARTH DISRUPTION IS 7.65 ACRES.

THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY CONTRACTOR OR AGENT DESIGNATED BY OWNER.

SOIL DATA

THIS SITE CONSISTS OF

46.7% – TEASDALE FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES, 25.2% RIDDLES SANDY LOAM, 1 TO 6 PERCENT SLOPES, 5.3% SLOPES UDORTHENTS AND UDIPSAMMENTS, NEARLY LEVEL, 10.7% URBAN LAND-BARRY-BRADY COMPLEX, 0 TO 3 PERCENT SLOPES, 12.2% HOUGHTON MUCK, 0 TO 1 PERCENT SLOPES.

BASED ON DATA PROVIDED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE.

LEGEND

- INDICATES LIMITS OF SILT FABRIC FENCE
- INDICATES LIMITS OF DRAINAGE DISTRICT AREA
- INDICATES LIMITS OF SOIL DISRUPTION
- INDICATES LOW POINT INLET FILTER OR PROPOSED DRAINAGE STRUCTURE

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NF ENGINEERS
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
TEL. (248) 332-7931
FAX. (248) 332-8257

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DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

DATE	
2026-01-15	Bid Documents
2025-10-01	Site Plan (100%)
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)
	Review

PROJECT DESCRIPTION

RENOVATE ARMORY

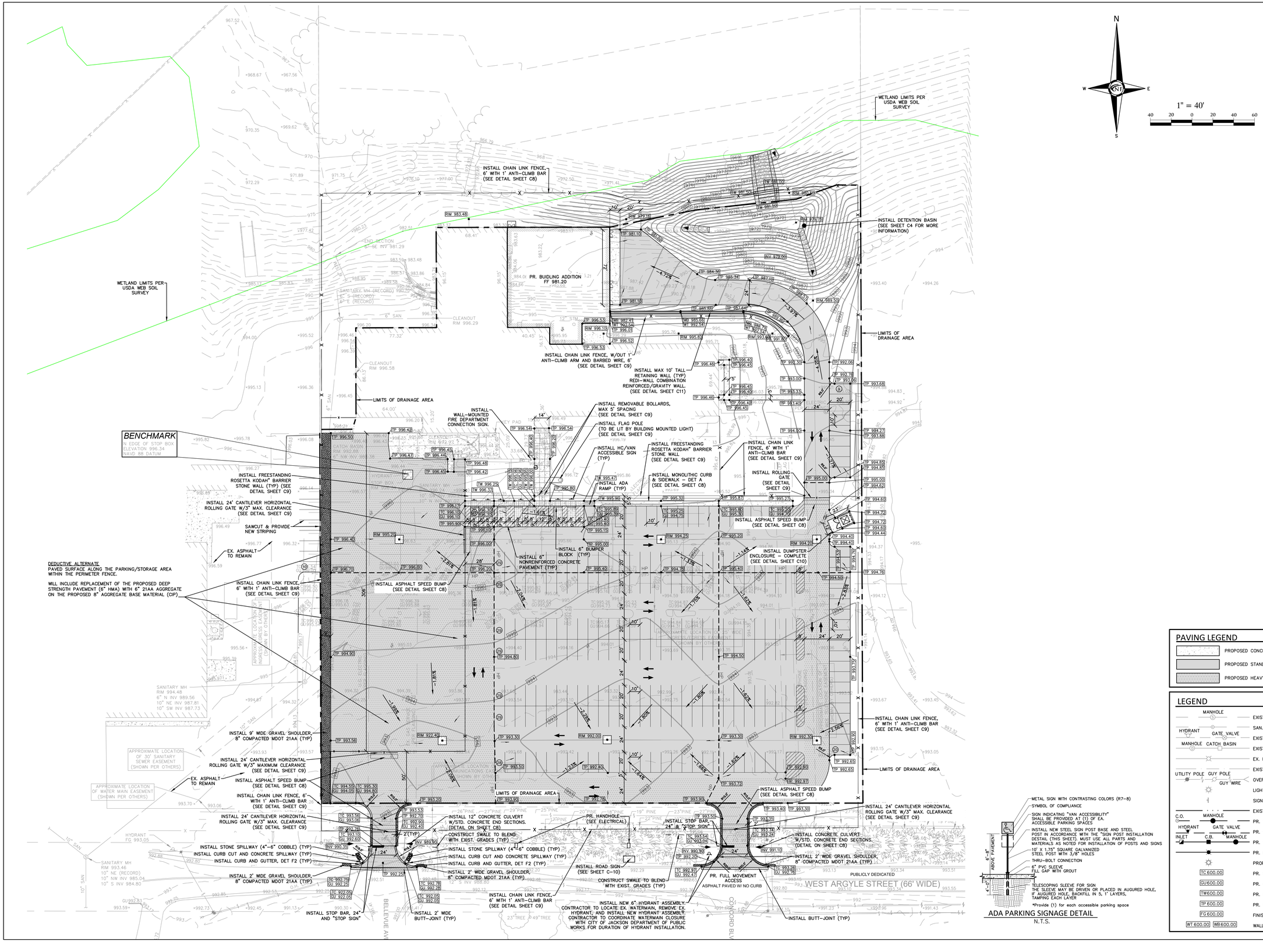
JACKSON (WEST) ARMORY DEVELOPMENT

2700 W Argyle Street, Jackson, MI 49202

SOIL EROSION & SEDIMENTATION CONTROL PLAN

DMVA PROJECT #	
DTMB PROJECT #	511/25039
ARCH PROJECT #	154601
DRAWN BY	EO
DESIGNED BY	MW
JC/ENG BY	SS

C3



*Provide (1) for each accessible parking space

ADA PARKING SIGNAGE DETAIL
N.T.S.

PAVING LEGEND

- PROPOSED CONCRETE PAVEMENT
- PROPOSED STANDARD DUTY ASPHALT PAVEMENT
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT

LEGEND

- MANHOLE — EXISTING SANITARY SEWER
- SAN. CLEAN OUT
- HYDRANT / GATE VALVE — EXISTING WATERMAIN
- MANHOLE / CATCH BASIN — EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- EXISTING BURIED CABLES
- UTILITY POLE / GUY POLE / GUY WIRE — OVERHEAD LINES
- LIGHT POLE
- SIGN
- EXISTING GAS MAIN
- C.O. / MANHOLE — PR. SANITARY SEWER
- HYDRANT / GATE VALVE — PR. WATER MAIN
- INLET / C.B. / MANHOLE — PR. STORM SEWER
- PR. R. Y. CATCH BASIN
- PROPOSED LIGHT POLE
- TC 600.00 — PR. TOP OF CURB ELEVATION
- GU600.00 — PR. GUTTER ELEVATION
- TW600.00 — PR. TOP OF WALK ELEVATION
- TP 600.00 — PR. TOP OF PVMT. ELEVATION
- FG 600.00 — FINISH GRADE ELEVATION
- WT 600.00 / WB 600.00 — WALL TOP/BOTTOM ELEVATION

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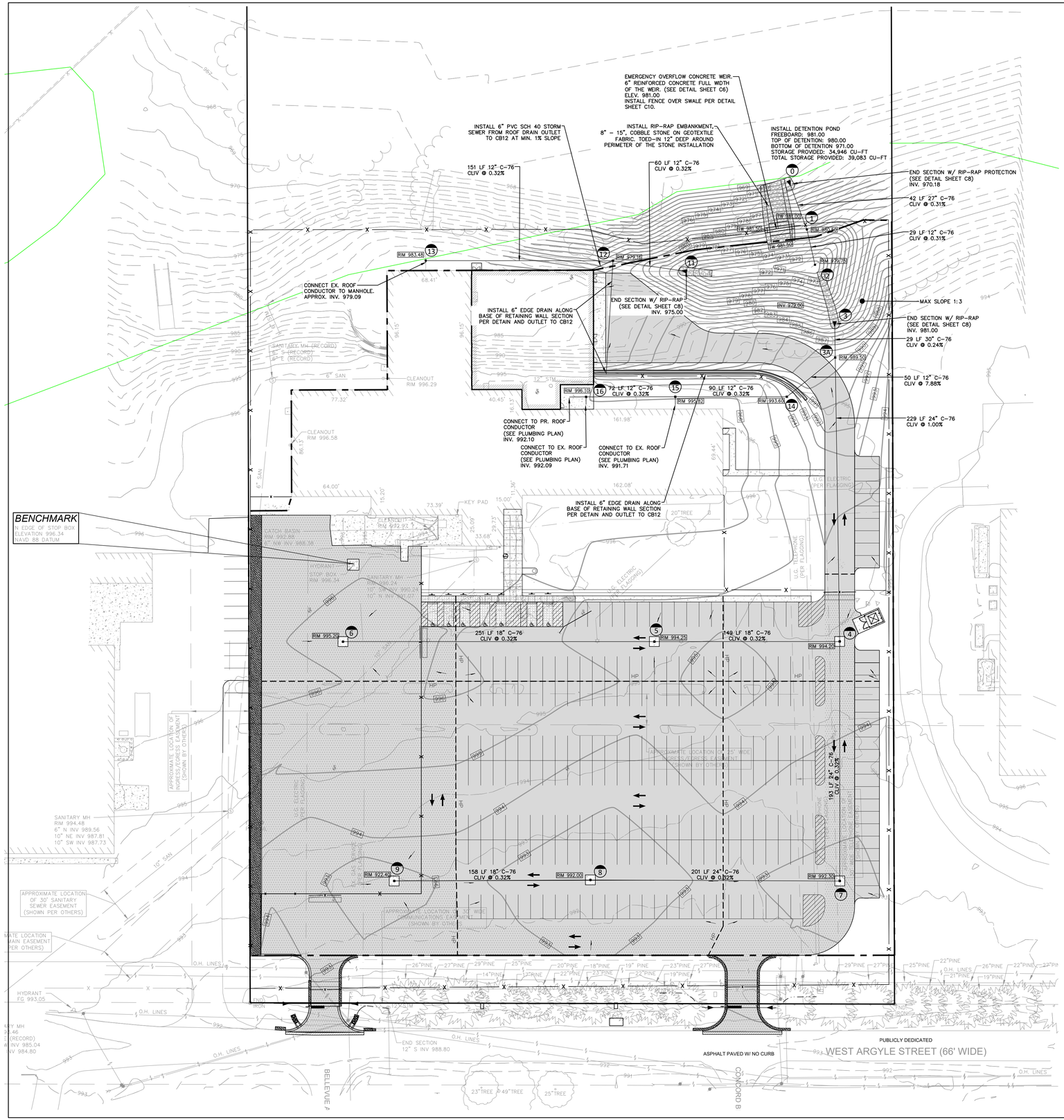
DATE	Review
2026-01-15	Bid Documents
2025-10-01	Site Plan (100%)
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)

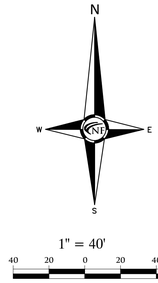
PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

IMPROVEMENTS PLAN

DMVA PROJECT #	51120309
DTMB PROJECT #	154601
ARCH PROJECT #	EO
DRAWN BY	MW
DESIGNED BY	SS
JC/ENG BY	

C4





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46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
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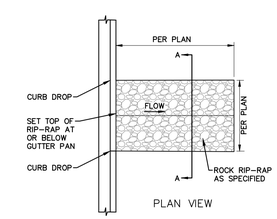
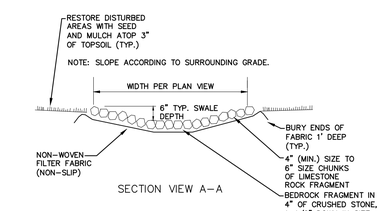
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

Storm Drainage Structure Schedule

Structure Name	Structure Details
#0 27" END SECTION	PR. 27" S. INV. 970.18
#1 OUTLET CONTROL STRUCTURE	PR. RIM 980.50 PR. 12" S. INV. 970.41 PR. 27" N. INV. 970.31
#2 STANDPIPE	PR. RIM 979.75 PR. 12" N. INV. 970.50
#3 12" END SECTION	PR. 30" S. INV. 981.00
#3A PR. 4' DIA. CATCH BASIN W/ EJ 1040 Frame & Type N Grate Cover	PR. RIM 989.50 PR. 24" S. INV. 981.47 PR. 12" SW. INV. 983.04 PR. 30" N. INV. 981.07
#4 PR. 4' DIA. CATCH BASIN W/ EJ 1040M1 GRATE	PR. RIM 994.20 PR. 24" S. INV. 984.16 PR. 18" W. INV. 986.66 PR. 24" N. INV. 983.76
#5 PR. 4' DIA. CATCH BASIN W/ EJ 1040M1 GRATE	PR. RIM 994.25 PR. 18" W. INV. 987.14 PR. 18" E. INV. 987.14
#6 PR. 4' DIA. CATCH BASIN W/ EJ 1040M1 GRATE	PR. RIM 995.10 PR. 18" E. INV. 987.95
#7 PR. 4' DIA. CATCH BASIN W/ EJ 1040M1 GRATE	PR. RIM 992.30 PR. 24" W. INV. 985.18 PR. 24" N. INV. 984.78
#8 PR. 4' DIA. CATCH BASIN W/ EJ 1040M1 GRATE	PR. RIM 992.00 PR. 18" W. INV. 986.23 PR. 24" E. INV. 985.83
#9 PR. 4' DIA. CATCH BASIN W/ EJ 1040M1 GRATE	PR. RIM 992.40 PR. 18" E. INV. 986.73
#11 END SECTION	PR. 12" W. INV. 975.00
#12 PR. 4' DIA. CATCH BASIN W/ EJ 1040 Frame & Solid Cover	PR. RIM 979.16 PR. 12" W. INV. 975.19 PR. 12" E. INV. 975.19 PR. 6" S. INV 976.20 PR. 6" SW. INV 976.20
#13 PR. 4' DIA. CATCH BASIN W/ EJ 1040 Frame & Solid Cover	PR. RIM 983.48 PR. 12" E. INV. 975.68 EX. 10" S. INV. 979.09
#14 PR. 4' DIA. CATCH BASIN W/ EJ 1040 Frame & SOLID COVER	PR. RIM 993.61 PR. 12" W. INV. 988.60 PR. 12" NE. INV. 987.00
#15 PR. 4' DIA. CATCH BASIN W/ EJ 1040 Frame & SOLID COVER	PR. RIM 995.83 PR. 12" W. INV. 988.99 PR. 12" E. INV. 988.89 EX. 10" S. INV. 991.71
#16 PR. 4' DIA. CATCH BASIN W/ EJ 1040 Frame & SOLID COVER	PR. RIM 996.10 PR. 12" E. INV. 989.22 EX. 10" S. INV. 992.09 PR. 10" W. INV. 992.07



PLAN VIEW



SECTION VIEW A-A

ROCK FRAGMENT RIP-RAP SPILLWAY DETAIL
(N.T.S.)

LEGEND

- MANHOLE — EXISTING SANITARY SEWER
- HYDRANT, GATE VALVE — SAN. CLEAN OUT
- MANHOLE, CATCH BASIN — EXISTING WATER MAIN
- EXISTING STORM SEWER
- EX. R. Y. CATCH BASIN
- UTILITY POLE, GUY POLE — EXISTING BURIED CABLES
- GUY WIRE — OVERHEAD LINES
- LIGHT POLE
- SIGN
- EXISTING GAS MAIN
- C.O., MANHOLE — PR. SANITARY SEWER
- HYDRANT, GATE VALVE — PR. WATER MAIN
- INLET, C.B., MANHOLE — PR. STORM SEWER
- PR. R. Y. CATCH BASIN
- SAND BACKFILL (95 % DENSITY)
- PROPOSED LIGHT POLE

2026-01-15	Bid Documents
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2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)
DATE	Review

PROJECT DESCRIPTION
RENOVATE AND ADDITION
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

STORMWATER MANAGEMENT PLAN

DMVA PROJECT #	51122030
DTMB PROJECT #	154601
ARCH PROJECT #	EO
DRAWN BY	MW
DESIGNED BY	SS
JC/ENG BY	

C5

LAND USE SUMMARY TABLE		
Characteristic	**Existing Conditions**	**Proposed Conditions**
Total Development Area (ac):	6.39	6.39
Impervious Area (ac):	3.05	4.86
Pervious Area (ac):	3.34	1.38
Water/Pond Area (ac):	0.00	0.15
Pervious Area Breakdown by Cover Type		
Meadow/fallow/natural areas (non-cultivated) (ac):	0.00	0.00
Predominant NRCS Soil Type	D	D
Improved areas (turf grass, landscape, row crops) (ac):	3.34	1.38
Predominant NRCS Soil Type	D	D
Wooded Areas (ac):	0.00	0.00
Predominant NRCS Soil Type	D	D
Required CPVC Volume (cft):		25,753
Provided CPVC Volume (cft):		**0**
Required Extended Detention Volume (cft):		37,639
Provided Extended Volume Provided (cft):		**37,639**
The professional engineer who signs and seals this site plan certifies that the values in this table reflect the WRC stormwater calculations required for this development and that geotechnical investigations were performed that provide conclusive documentation that demonstrates whether infiltration (i.e., CPVC Volume Control) is practicable.		
Calculated Weighted C Factor:		**0.85**

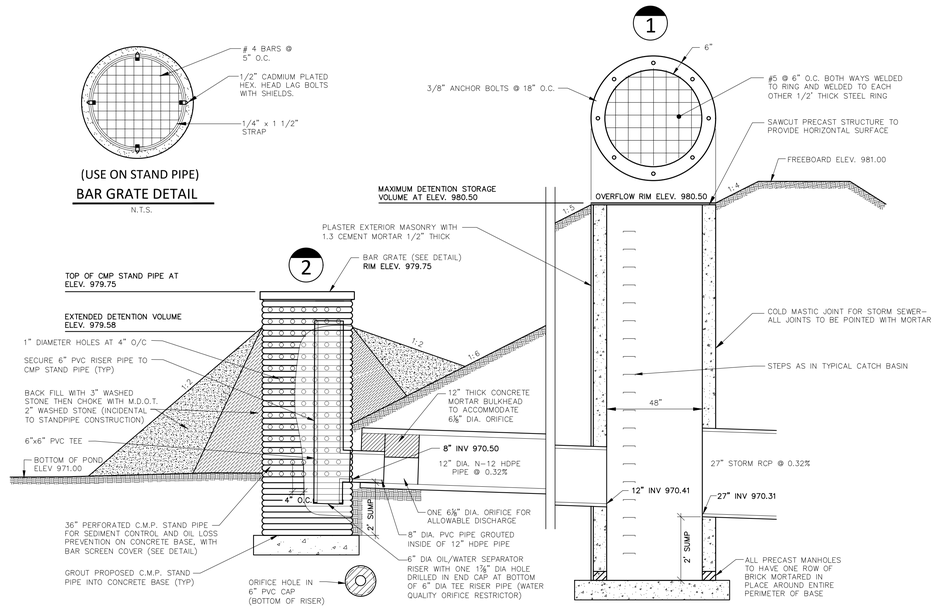
REQUIRED DETENTION VOLUME CALCULATIONS		
50 Year Post-Development Detention Volume		
Name of Project:	**Jackson Armory**	
Location of Project:	**Jackson, MI**	
NFE Project No.:	**O679**	
Contributing Acreage "A":	6.39	*ac*
Weighted Runoff Coefficient "C":	0.85	
Time of Concentration "Tc":	15.00	*min*
1. Calculate Required Water Quality Volume (Vwq) (1" Rainfall Event)		
Vwq = 3,630(C)(A)	19,810	*cft*
2. Calculate Required Water Quality Rate (Qwq)		
Qwq = (C)(A)30.20/(Tc+9.17)^.81	12.49	*cfs*
3. Calculate Required Channel Protection Volume (Vcpvc) (1.3" Rainfall Event)		
Vcpvc = 4,719(C)(A)	25,753	*cft*
4. Calculate Required Extended Detention Volume (Ved) (1.9" Rainfall Event)		
Ved = 6,897(C)(A)	37,639	*cft*
5. Calculate Extended Detention Outlet Rate (Qed) (48 hour discharge)		
Qed = Ved / [(48 hr)(60 min)(60 sec)] = Ved/172,800	0.22	*cfs*
6. Calculate 50-year Rainfall Intensity (I50)		
I50 = 2.5 in/hr	2.50	*in/hr*
7. Calculate 50-year Post-Development Peak Inflow Rate (Q50-in)		
Q50-in = (C)(I50)(A)	13.64	*cfs*
8. Calculate the Allowable Release Rate (Qvrr)		
Qvrr = 1.1055-(0.206*LN(A))	0.72	*cfs/ac*
Restricted Outlet rate per local municipality	0.150	*cfs/ac*
9. Calculate Allowable 50-year Storm Outlet Rate (Q50P)		
Q50p = (Qvrr)(A)	0.96	*cfs*
10. Calculate Storage Curve Factor (R)		
R = 0.206-(0.15)(LN(Q50P/Q50-in))	0.604	
11. Calculate Required 50-year Storm Volume In (V50R)		
V50R = (I50*(43560/12)) (C)(A)	49,525	*cft*
12. Calculate 50-year Storm Detention Storage Volume (V50D)		
V50D = (V50R)(R)	29,930	*cft*
Vcp(credit)	0	*cft*
TOTAL DETENTION VOLUME REQUIRED:	**37,639**	***cft***

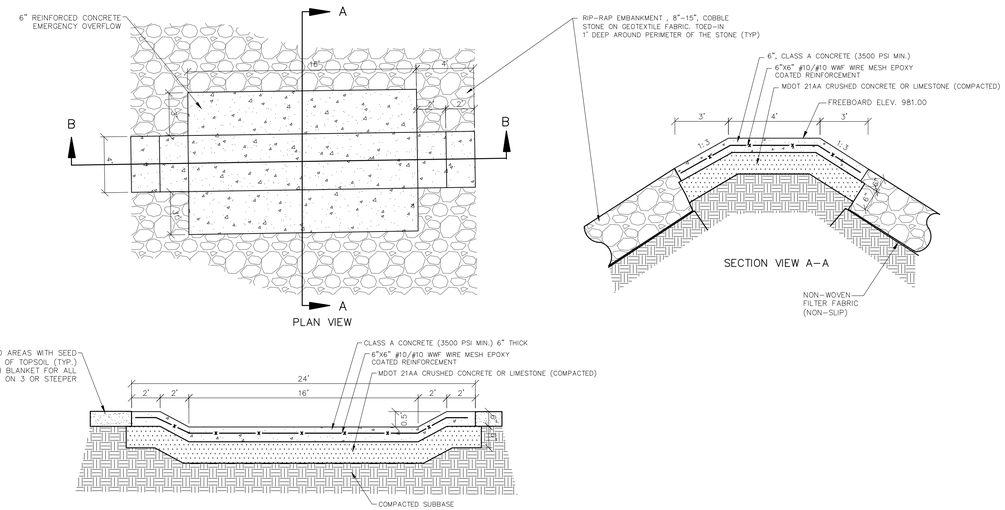
PROVIDED DETENTION VOLUME CALCULATIONS			
Volume of Frustum: AB = H (A + B + √AB)/ 3			
DETENTION BASIN			
Contour Elevation	**Surface Area (sft)**	**Incremental Volume (cft)**	**Cumulative Volume (cft)**
971	204	--	0
972	786	463	463
973	1,480	1,115	1,578
974	2,263	1,858	3,436
975	3,132	2,686	6,122
976	4,075	3,593	9,715
977	5,187	4,620	14,335
978	6,301	5,735	20,070
979	7,430	6,858	26,928
980	8,620	8,018	34,946
Volume of Proposed Detention Basin:			***34,946***
TOTAL VOLUME PROVIDED (cft)			**34,946**

TOTAL DETENTION VOLUME CALCULATIONS		
STORM SEWER + DETENTION BASIN		
STORM SEWER STORAGE VOLUME		
18" Storm (597 LF)	1,056.13	*cft*
24" Storm (623 LF)	1,959.34	*cft*
30" Storm (32 LF)	240.59	*cft*
Storm Structures (7, 4' DIA Structures, filled to 1' below rim)	880.60	*cft*
Total Storage Provided in Storm Sewer System	***4,137***	***cft***
DETENTION BASIN		
Total Storage Provided in Proposed Detention Pond	***34,946***	***cft***
TOTAL DETENTION VOLUME PROVIDED	**39,083**	***cft***

PROVIDED CATCH BASIN INFILTRATION VOLUME CALCULATIONS		
PROVIDED INFILTRATION VOLUME		
1. Calculate Infiltration Volume of Open Bottom Storm Structure		
Ksat (Estimated per Geotechnical Report)	0.5-0.8	*in/hr*
SF (safety factor)	1	
Sump Volume in Catch Basin	37.74	*cft*
Vi=Sump Volume * # of Catch Basins		
TOTAL INFILTRATION VOLUME PROVIDED:	**301.9**	***cft***

MULTI-STAGE DETENTION OUTLET CALCULATIONS		
Extended Detention & 50-Year - Circular Orifice		
Contributing Acreage "A":	6.39	*ac*
Weighted Runoff Coefficient "C":	0.85	
50-Year Storm Allowable Outlet Rate "Q50p":	0.959	*cfs*
Extended Detention Volume Discharge Rate "Qed":	0.218	*cfs*
Top of Detention Storage "Ztop":	980.00	
Bottom of Detention Storage "Zbot":	971.00	
Elevation of Outlet Control "Zout":	970.50	
EXTENDED DETENTION OUTLET CALCULATIONS		
Extended Detention Volume "Ved":	37,639	*cft*
Extended Detention Elevation "Zed":	979.58	
Calculate Average Head "Hed":		
Hed = 0.5*(Zed-Zout)	4.540	*ft*
Calculate Required Orifice Area "Aed":		
Aed = Qed / (0.62*(2*g*Hed)^0.5)	0.021	*sft*
Provided Number of Holes	1	*Hole*
Required Diameter of Holes	1.875	*in*
Provided Orifice Area "Aed-act ":	0.019	*sft*
Calculate Actual Average Release Rate "Qed-act":		
Qed-act = 0.62*Aed-act*((2*g*Hed)^0.5)	0.203	*cfs*
Calculate Actual Holding Time "Ted":		
Ted = (Ved/Qed-act)/3600	51.43	*hr*
**** Use (1) 1.875'' Hole @ 970.50 ****		
50-YEAR FLOOD VOLUME OUTLET CALCULATIONS		
Calculate Head on Extended Detention Holes "Hout":		
Hout = Ztop - Zout	9.500	*ft*
Calculate Flow through Extended Detention Holes "Q50p-ed":		
Q50p-ed = (0.62*Aed-act(2*32.2*Hout)^0.5)	0.294	*cfs*
Calculate Adjusted Required Outlet Release Rate "Q50p-adj":		
Q50p-adj = Q50p - Q50p-ed	0.664	*cfs*
Calculate Head on 50-year Holes "H50p":		
H50p = Ztop - Zed	0.42	*ft*
Calculate Required Orifice Area "A50p":		
A50p = (Q50p-adj / (0.62*(2*g*H50p)^0.5))	0.206	*sft*
Provided Number of Holes	1	*Hole*
Required Diameter of Holes	6.125	*in*
Provided Orifice Area "A50p-act":	0.205	*sft*
Calculate Actual Peak Release Rate "Q50p-act":		
Q50p-act = (0.62*A50p-act)*(2*g*H50p)^0.5)	0.660	*cfs*
Calculate Total Release Rate "Q50p-tot":		
Q50p-tot = Q50p-ed + Q50p-act	0.954	*cfs*
**** Use (1) 6.125" Dia. Orifice in Outlet Pipe ****		
OVERFLOW WIER FLOW RATE		
10 year flow rate	6.021	*cfs*
Length of Weir Crest (Lweir)	6.000	*ft*
Head Above Wier Crest (Hweir)	0.500	*ft*
Qweir = 3.367*Lweir*Hweir^(3/2)	7.142	*cfs*





STORM SEWER CALCULATIONS

Intensity (I) = B / (T + D) ^E
B = 119
D = 15
E = 1
Industrial Developments "Tc" = 15 min
Concrete Pipe "n" Value = 0.013

Project No: O679
Project Name: Jackson Armory
Location: Jackson, MI
Dated: 09/19/25

Drainage Area	From Manhole Number	To Manhole Number	Drainage Area (Acres)	Runoff Coeff. (C)	Equiv. Area (CxA)	Total Area (Sum CxA)	Total Area (Acres)	Time of Concn. Tc (min.)	Rainfall Intensity I (in/hr)	Actual Discharge Q (cfs)	Pipe Size (inch)	Pipe Slope (% Slope)	Pipe Length (feet)	Flow Full Velocity (ft/sec)	Time of Flow (Minutes)	Full Pipe Capacity (cfs)	Minimum HGL per Flow	HGL Elev. Upper End	HGL Elev. Lower End	Rim Elevation Upper End	Rim Elevation Lower End	Invert Elevation Upper End	Invert Elevation Lower End
10	10	8	0.11	0.90	0.10	0.10	0.11	15.00	3.97	0.40	18	0.32	39	3.4	0.2	5.94	0.00%	986.75	986.63	992.44	992.00	985.55	985.43
6	6	5	0.49	0.90	0.44	0.44	0.49	15.00	3.97	1.74	18	0.32	251	3.4	1.2	5.94	0.03%	989.15	988.34	995.10	994.25	987.95	987.14
5	5	4	0.70	0.56	0.40	0.83	1.19	16.20	3.81	3.18	18	0.32	149	3.4	0.7	5.94	0.09%	988.34	987.86	994.25	994.20	987.14	986.66
9	9	8	0.80	0.90	0.72	0.72	0.80	15.00	3.97	2.86	18	0.32	158	3.4	0.8	5.94	0.07%	987.13	986.63	992.40	992.00	985.93	985.43
8	8	7	0.95	0.90	0.85	1.67	1.86	15.80	3.86	6.47	24	0.32	201	4.1	0.8	12.80	0.08%	986.63	985.98	992.00	992.30	985.03	984.38
7	7	4	0.66	0.82	0.54	2.21	2.52	16.60	3.77	8.33	24	0.32	193	4.1	0.8	12.80	0.14%	985.98	985.36	992.30	994.20	984.38	983.76
-	4	3A	0.27	0.70	0.19	3.24	3.98	17.40	3.67	11.89	24	1.00	229	7.2	0.5	22.62	0.28%	985.36	983.07	994.20	989.36	983.76	981.47
4	3A	3	0.00	0.00	0.00	3.24	3.98	17.90	3.62	11.89	30	0.24	29	4.1	0.1	20.09	0.08%	983.07	983.00	989.36	984.72	981.07	981.00

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LAND SURVEYORS
LAND PLANNERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
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FAX. (248) 332-8257

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

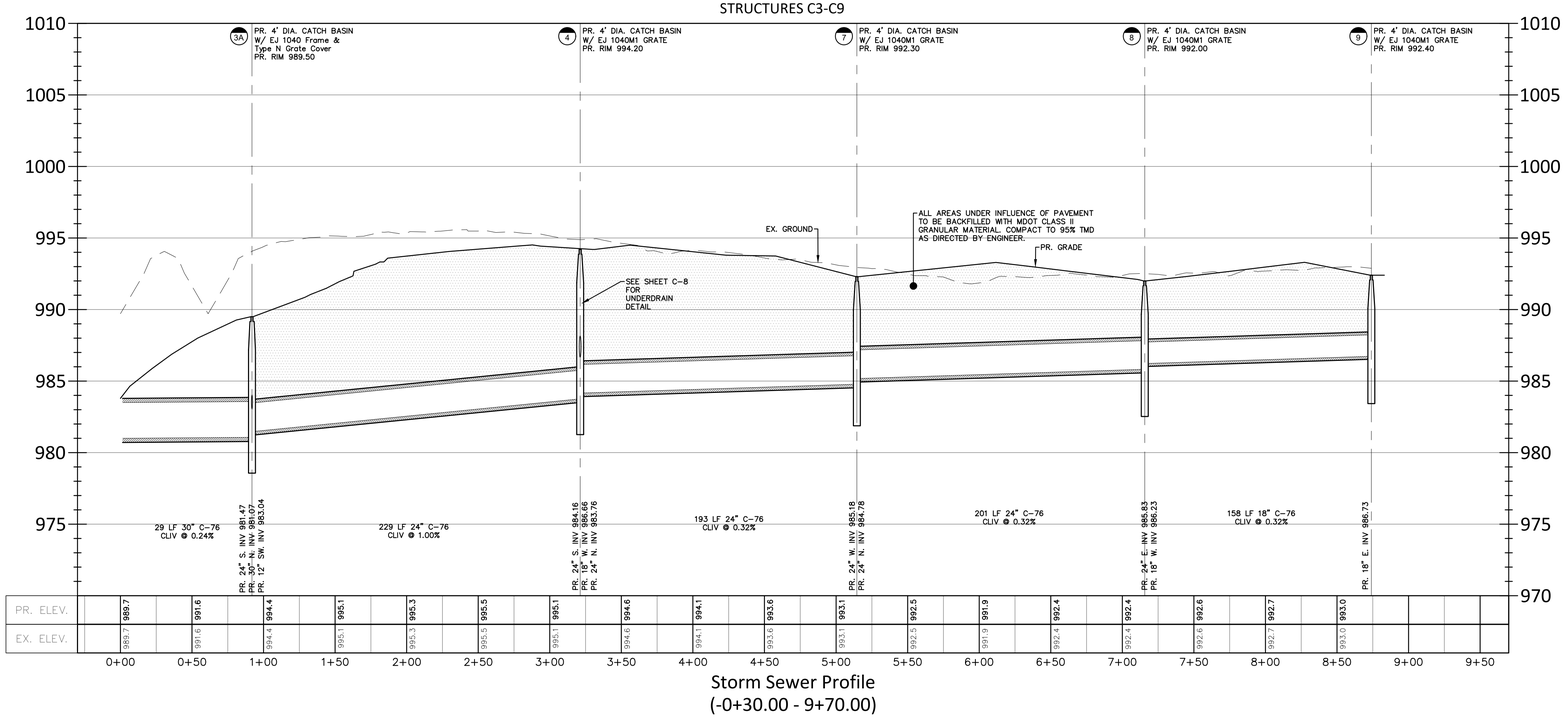
DATE	Review
2026-01-15	Bid Documents
2025-10-01	Site Plan (100%)
2025-08-22	Site Plan (90%)
2025-08-01	Site Plan (60%)

PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

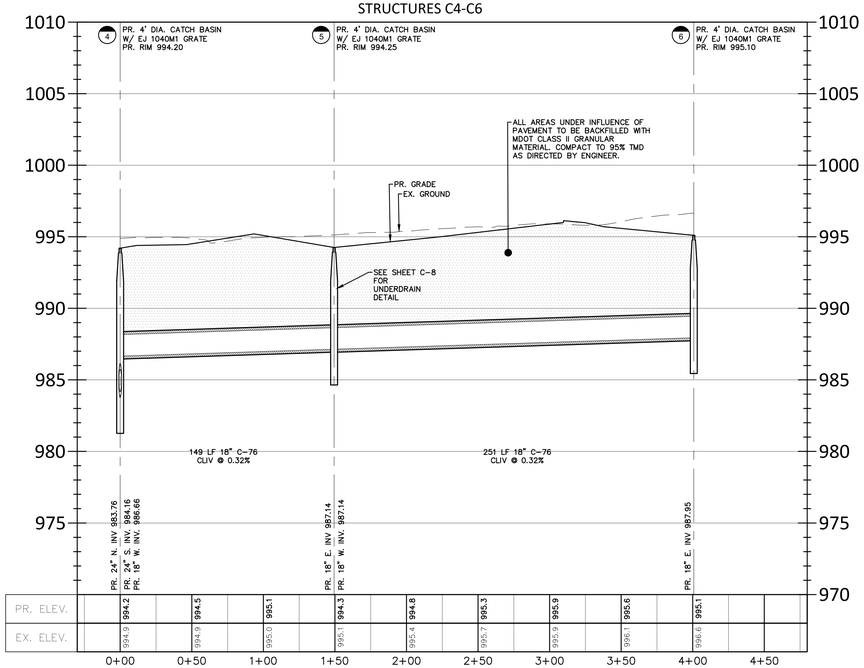
STORMWATER & DETENTION CALCULATIONS

DMVA PROJECT #	511/25035
DTMB PROJECT #	154601
ARCH PROJECT #	EO
DRAWN BY	MW
DESIGNED BY	SS
JC/ENG BY	

C6



Storm Sewer Profile
(-0+30.00 - 9+70.00)



Storm Sewer Profile
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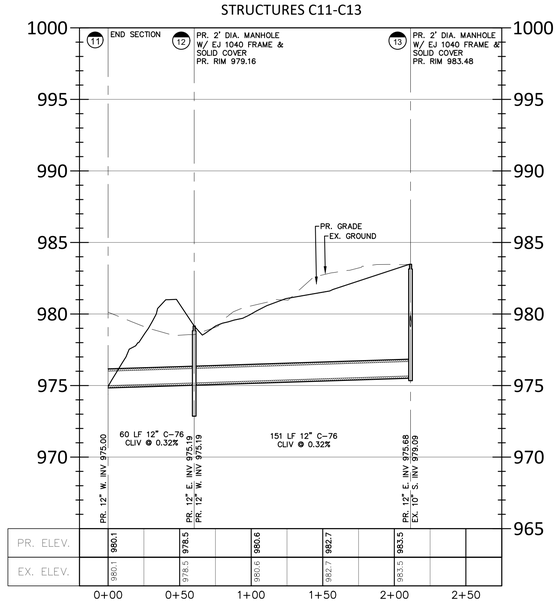

Storm Sewer Profile
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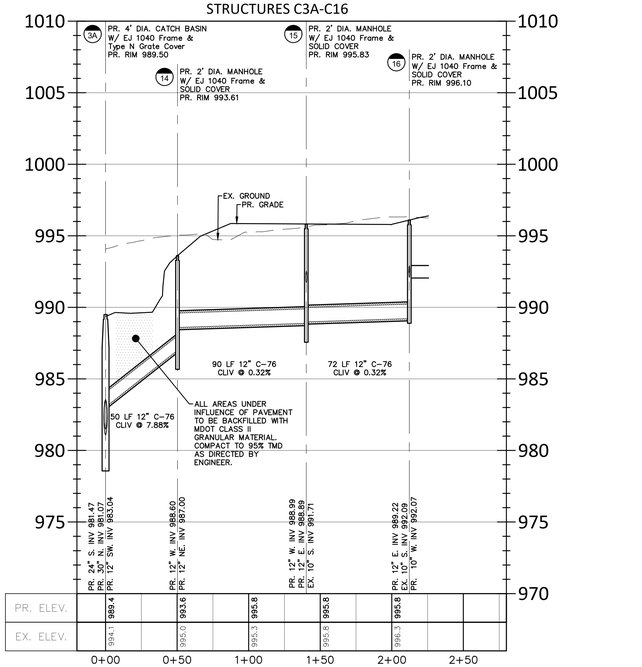

Storm Sewer Profile
(-0+20.00 - 2+80.00)

1" = 50' / 1"=5'
50 25 0 25 50 75

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STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

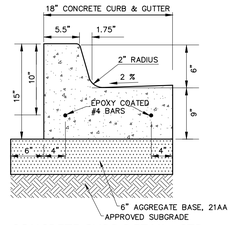
DATE	Review
2025-08-01	Site Plan (60%)
2025-09-22	Site Plan (90%)
2025-10-01	Site Plan (100%)
2026-01-15	Bid Documents

PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

STORM PROFILES

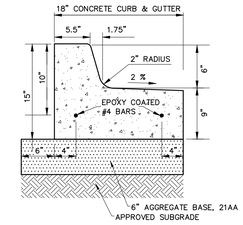
DMVA PROJECT #	
DTMB PROJECT #	511/23039
ARCH PROJECT #	15460
DRAWN BY	EO
DESIGNED BY	MW
JC/ENG BY	SS

C7



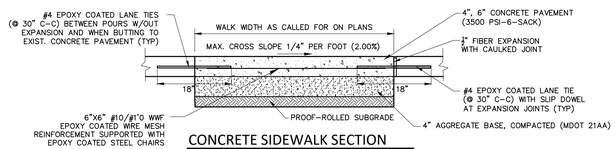
CONCRETE CURB DETAIL - STD

N.T.S.



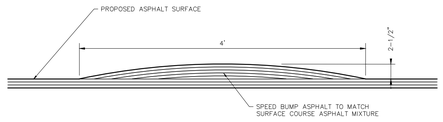
CONCRETE CURB DETAIL - REVERSE

N.T.S.

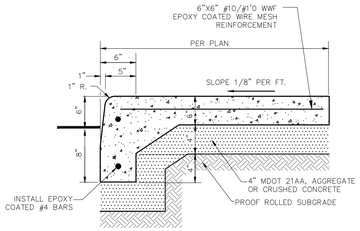


CONCRETE SIDEWALK SECTION

N.T.S.

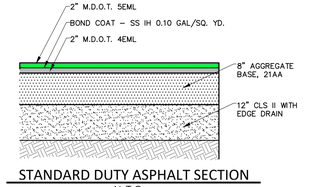


SPEED BUMP DETAIL



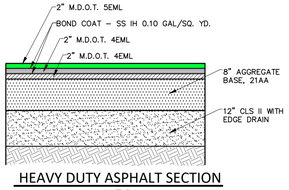
6" MONOLITHIC CURB - DET A

N.T.S.



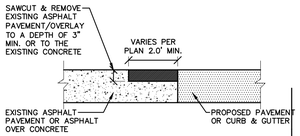
STANDARD DUTY ASPHALT SECTION

N.T.S.



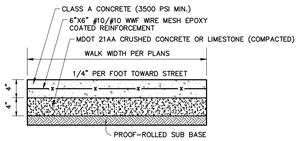
HEAVY DUTY ASPHALT SECTION

N.T.S.



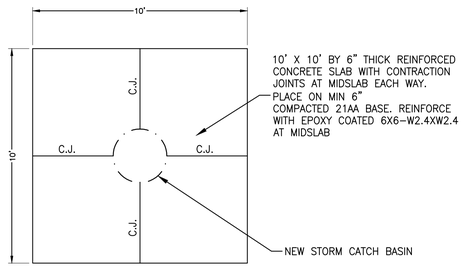
BUTT JOINT DETAIL

N.T.S.



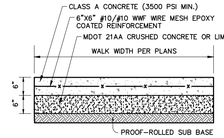
4" CONCRETE SIDEWALK SECTION

N.T.S.



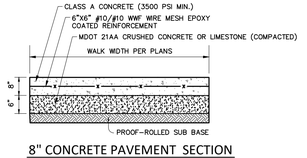
CONCRETE COLLAR DETAIL

N.T.S.



6" CONCRETE SECTION

N.T.S.



8" CONCRETE PAVEMENT SECTION

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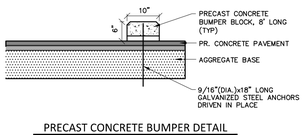
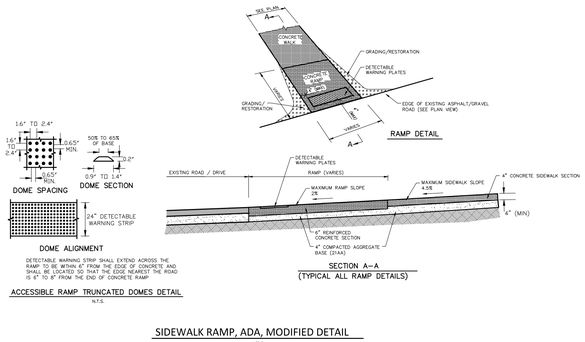


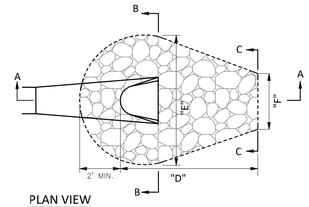
PRECAST CONCRETE BUMPER DETAIL

N.T.S.

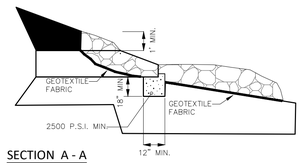


SIDEWALK RAMP, ADA, MODIFIED DETAIL

N.T.S.

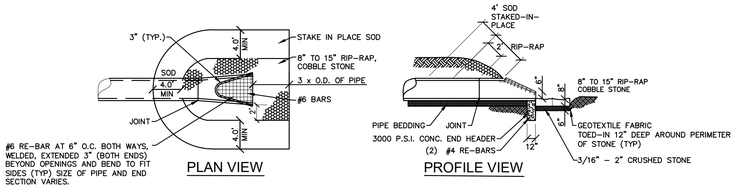


PIPE DIA.	"D"	"E"	"F"	SY
12"	5' 0"	6' 6"	3' 0"	4
15"	5' 0"	7' 0"	3' 0"	4
18"	5' 0"	7' 6"	3' 6"	4
21"	5' 6"	8' 0"	4' 0"	5
24"	6' 0"	8' 6"	4' 6"	6
27"	6' 6"	9' 0"	5' 0"	7
30"	7' 0"	9' 6"	5' 6"	8
36"	8' 0"	10' 9"	6' 0"	10
42"	9' 0"	11' 9"	6' 6"	12
48"	10' 0"	13' 0"	7' 0"	14



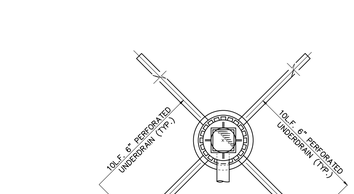
GROUTED STONE RIP-RAP

N.T.S.



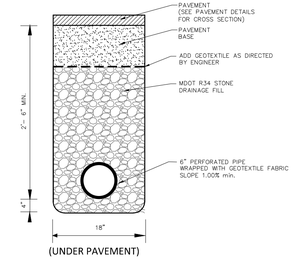
END SECTION AND BAR SCREEN DETAIL

N.T.S.



UNDERDRAIN DETAIL

N.T.S.



PERFORATED UNDERDRAIN

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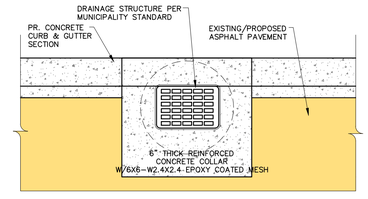
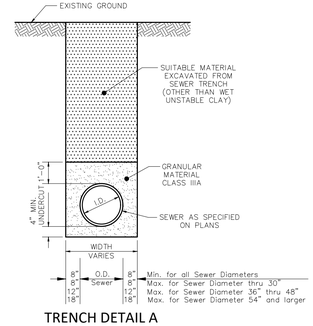


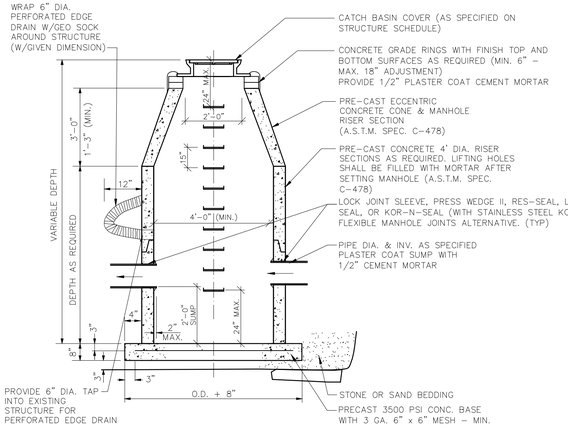
DRAINAGE STRUCTURE BOXOUT - DETAIL I

N.T.S.



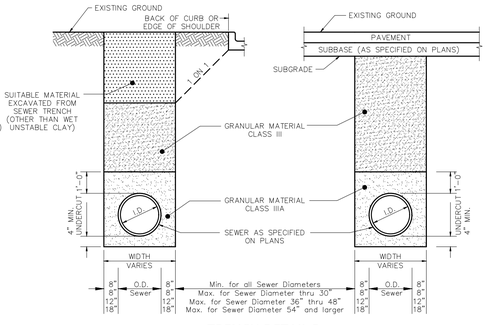
TRENCH DETAIL A
SEWER NOT UNDER ROADBED

N.T.S.



TYPICAL PRE-CAST CATCH BASIN

N.T.S.



TRENCH DETAIL B
SEWER UNDER ROADBED
OR WITHIN INFLUENCE OF ROADBED

N.T.S.

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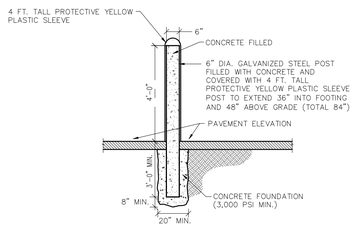
2026-01-15	Bid Documents
2025-10-01	Site Plan (100%)
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)
DATE	Review

PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

NOTES AND DETAILS

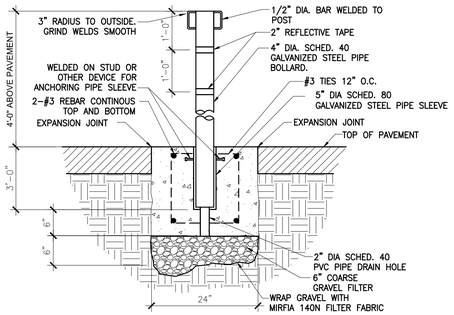
DMVA PROJECT #	51122030B
DTMB PROJECT #	154601
ARCH PROJECT #	EO
DRAWN BY	MW
DESIGNED BY	SS
JC/ENG BY	

C8



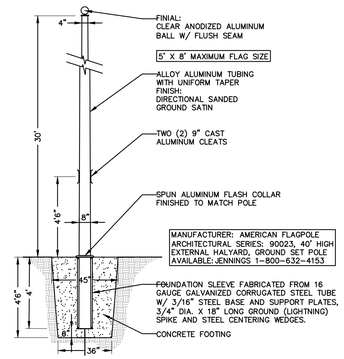
GUARD POST DETAIL (SIDEWALK AND DUMPSTER ENCLSURE)

N.T.S.



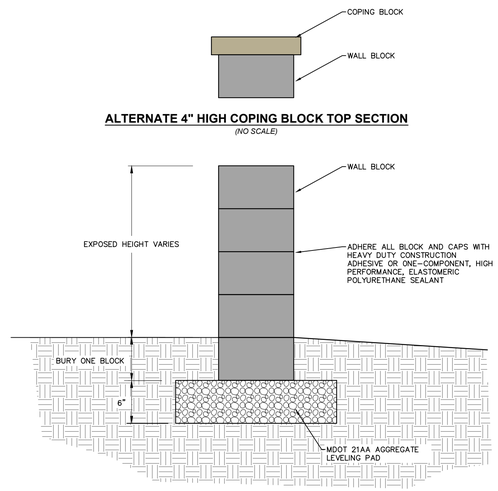
REMOVALBLE BOLLARD

N.T.S.



FLAGPOLE DETAIL

N.T.S.



TYPICAL FREESTANDING ROSSETTA "KODAH" WALL SECTION

FREESTANDING INSTALLATION NOTES

1. LEVELING PAD EXCAVATION SHOULD BE TO THE DEPTH AS NOTED ON THE TYIPCAL SECTION FOR THE WALL , BUT AT LEAST 6" BELOW THE ELEVATION OF THE BOTTOM BLOCK IN THE WALL. WIDTH SHOULD BE A MINIMUM 23" WHICH WILL PROVIDE 6" IN FRONT OF AND BEHIND THE BOTTOM BLOCK.

2. EXISTING FOUNDATION SOIL SHALL COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR. FOUNDATION SOIL SHOULD BE FIRM, DRY AND FREE OF DEBRIS, STONES, ROOTS, ETC.

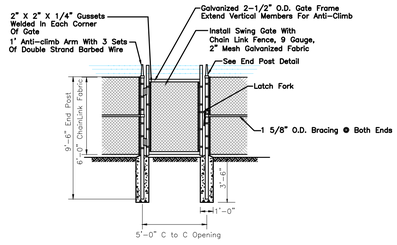
3. PLACE CRUSHED MDOT 21AA AGGREGATE LEVELING PAD COMPACTED TO 95% OF STANDARD PROCTOR.

4. WALLS SHALL HAVE THE BOTTOM COURSE BURIED ONE BLOCK BELOW PROPOSED FINISH GRADE. MINIMUM 6" BELOW GRADE.

5. PLACE THE BOTTOM COURSE OF THE WALL BLOCKS. TAKE CARE TO LEVEL THE BLOCKS BOTH PARALLEL AND PERPENDICULAR TO THE WALL. ADJACENT BLOCKS SHOULD BE PLACED SO THE TAPERS ON THE SIDES ARE GOING OPPOSITE DIRECTIONS TO PROVIDE UNIFORM WALL FACE WITH NO GAPS ON EITHER SIDE OF THE WALL.

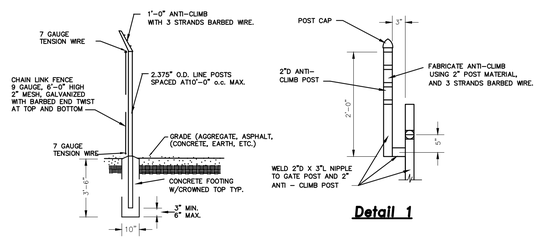
6. PLACE SUCCESSIVE UNITS TO THE DESIRED WALL HEIGHT.

7. CONCRETE ADHESIVE IS REQUIRED BETWEEN ALL BLOCKS AND THE COPING LAYER OF THE FREESTANDING WALL. ADHESIVE SHALL SPECIFICALLY FORMULATED FOR OUTDOOR USE WITH CONCRETE RETAINING WALL PRODUCTS.

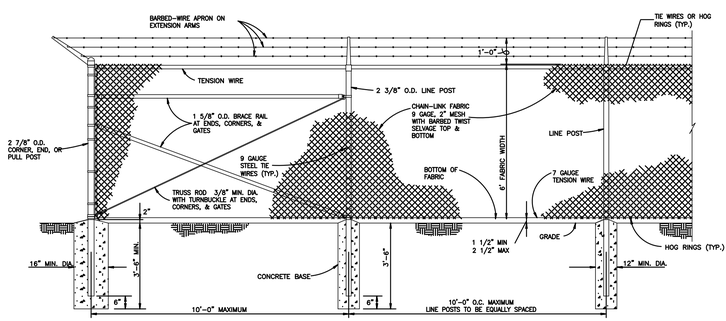


MAN GATE DETAIL

NOT TO SCALE

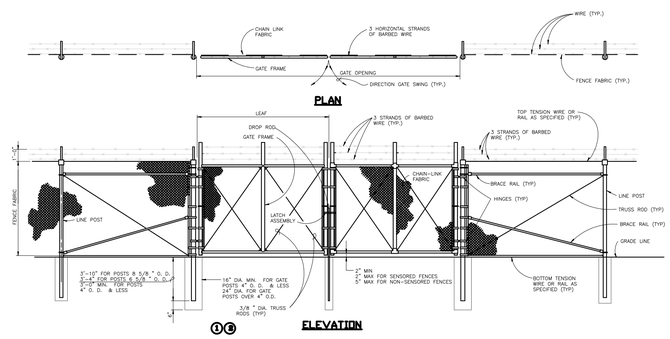


Line Post Detail



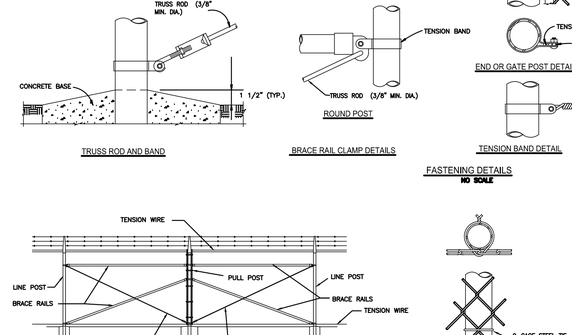
SECURITY FENCE DETAIL

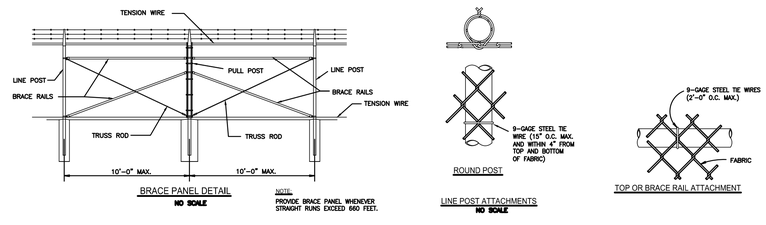
NOT TO SCALE

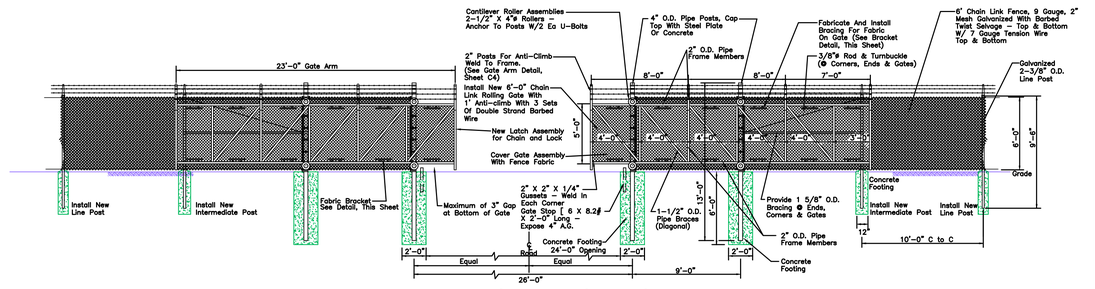


SWINGING (DOUBLE) GATE

NOT TO SCALE







24' ROLLING (DOUBLE) GATE

NOT TO SCALE

CIVIL ENGINEER
CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
TEL (248) 332-7931
FAX (248) 332-8257
NF ENGINEERS

STATE OF MICHIGAN
DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

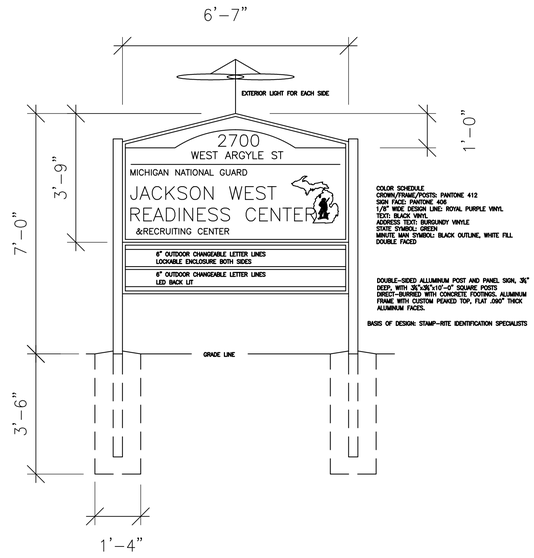
2026-01-15	Bid Documents
2025-10-01	Site Plan (100%)
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)
DATE	Review

PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

NOTES AND DETAILS

DMVA PROJECT #	51125039		
DTMB PROJECT #	154851		
ARCH PROJECT #		EO	
DRAWN BY		MW	
DESIGNED BY		SS	
JC/ENG BY			

C9

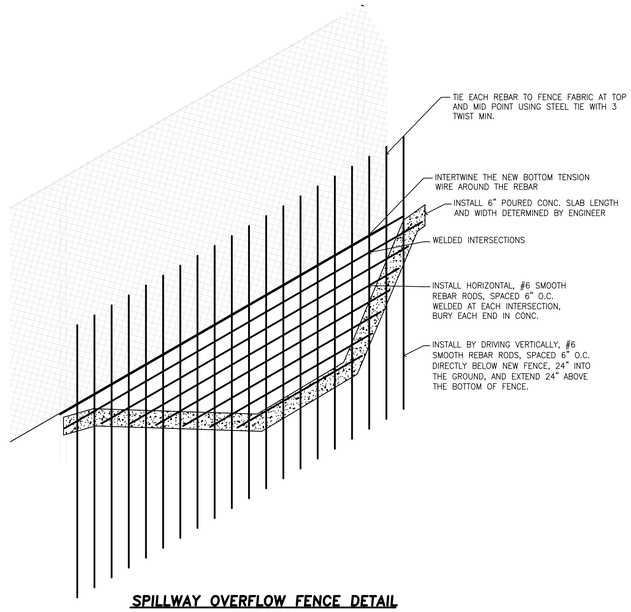


ROAD SIGN
NOT TO SCALE

** THE CONTRACTOR SHALL INSTALL GSA PERIMETER SIGNS PROVIDED BY DMVA FOR ALL NEW FENCING AND GATES. THE CONTRACTOR SHALL INSTALL SIGNS ON THE SECURE SIDE OF THE FENCING WITH NOMENCLATURE SHOWN TO THE ROAD SIDE OF THE FENCING. THE SIGNS SHALL BE POSTED AT INTERVALS OF NO MORE THAN 100 FEET AND ON ALL NEW GATES. FASTEN WITH HOG RINGS ON 4 CORNERS.

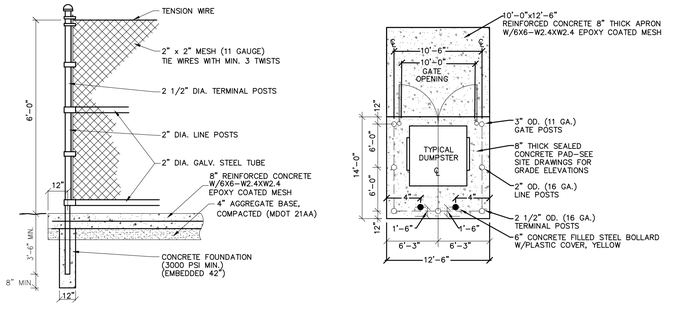
GSA SAFETY SIGN
NONREFLECTORIZED SIGN INCLUDES A RED, WHITE AND BLUE SHIELD ON A CREAM BACKGROUND
GSA NUMBER 9905-00-559-2971

NO TRESPASSING SIGN
NOT TO SCALE



SPILLWAY OVERFLOW FENCE DETAIL
NOT TO SCALE

NOTE: INSTALL GREEN PRIVACY SLATS
IN ALL CHAIN LINK SECTIONS
BASIS OF DEIGN IS FROM PRIVACYLINK – "ULTIMATE SLATS"
SLATSOURCE SLATS, EXTRUDED FROM HIGH-DENSITY POLYETHYLENE (HDPE)



DUMPSTER ENCLOSURE SECTION
(6 FEET HIGH W/GALVANIZED FENCE)

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CIVIL ENGINEERS
LAND SURVEYORS
LAND PLANNERS
NF ENGINEERS
46777 WOODWARD AVENUE
PONTIAC, MI 48342-5032
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DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
STATE FACILITIES ADMINISTRATION
DESIGN AND CONSTRUCTION DIVISION
ADAM P. LACH, RA, DIRECTOR

DATE	Review
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2025-10-01	Site Plan (100%)
2025-09-22	Site Plan (90%)
2025-08-01	Site Plan (60%)

PROJECT DESCRIPTION
RENOVATE ARMORY
JACKSON (WEST) ARMORY DEVELOPMENT
2700 W Argyle Street, Jackson, MI 49202

NOTES & DETAILS

DMVA PROJECT #	
DTMB PROJECT #	511/25039
ARCH PROJECT #	154581
DRAWN BY	EO
DESIGNED BY	MW
JC/ENG BY	SS

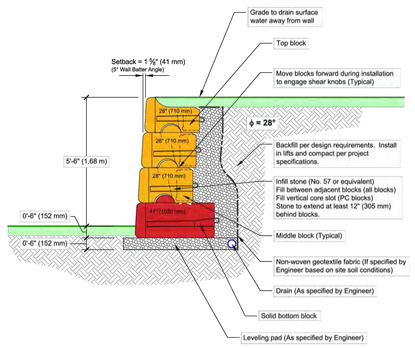
C10

ϕ = 28° | SILTY SAND or CLAYEY SAND

LOAD CONDITION A | NO LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE

4 BLOCK HIGH SECTION
(3) 28" (710 mm) Blocks
(1) 41" (1030 mm) Block

PRELIMINARY
Professional Engineering Design Required for Construction



This drawing is for reference only. Determination of the suitability and/or manner of use of any details contained in this document is the sole responsibility of the design engineer of record. Final project designs, including all construction details, shall be prepared by a licensed professional engineer using the actual conditions of the proposed site. Final wall design must address both internal and external drainage and all modes of wall stability.

DRAWN BY:	C. Kruger	TITLE:	**Preliminary Wall Section**
APPROVED BY:	J. Johnson		Silty Sand or Clayey Sand, **ϕ = 28°**
DATE:	June 10, 2015		No Live Load Surcharge, No Back Slope, No Toe Slope
SHEET:	1 of 1	FILE:	A_28_B_41_72_cad.dwg

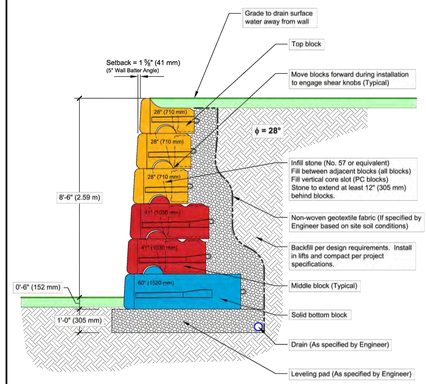
REDI-ROCK
05481 US 31 SOUTH, CHARLEVOIX, MI 49720
(866) 222-8400 ext 3010 • engineering@redi-rock.com
www.redi-rock.com

ϕ = 28° | SILTY SAND or CLAYEY SAND

LOAD CONDITION A | NO LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE

6 BLOCK HIGH SECTION
(3) 28" (710 mm) Blocks
(2) 41" (1030 mm) Blocks
(1) 60" (1520 mm) Block

PRELIMINARY
Professional Engineering Design Required for Construction



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DRAWN BY:	C. Kruger	TITLE:	**Preliminary Wall Section**
APPROVED BY:	J. Johnson		Silty Sand or Clayey Sand, **ϕ = 28°**
DATE:	June 10, 2015		No Live Load Surcharge, No Back Slope, No Toe Slope
SHEET:	1 of 1	FILE:	A_28_B_60_108_cad.dwg

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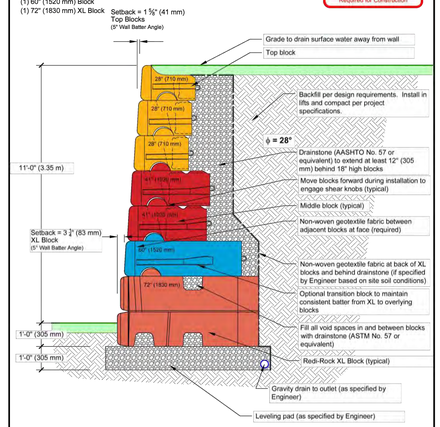
www.redi-rock.com

ϕ = 28° | SILTY SAND or CLAYEY SAND

LOAD CONDITION A | NO LIVE LOAD SURCHARGE, NO BACK SLOPE, NO TOE SLOPE

12.0-FOOT (3.66 m) HIGH SECTION
(3) 28" (710 mm) Blocks
(2) 41" (1030 mm) Blocks
(1) 60" (1520 mm) Block
(1) 72" (1830 mm) XL Block

PRELIMINARY
Professional Engineering Design Required for Construction



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DRAWN BY:	N. Lindwall	TITLE:	**Preliminary Wall Section**
APPROVED BY:	J. Johnson		Silty Sand or Clayey Sand, **ϕ = 28°**
DATE:	May 7, 2019		No Live Load Surcharge, No Back Slope, No Toe Slope
SHEET:	1 of 1	FILE:	A_28_XL_144_cad.dwg

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www.redi-rock.com

Job Name	Jackson Armory
Company/Person	NF Engineers
Address	
City State, Zip	
Telephone	

Copy to Orders

The copy button may take a moment to transfer the blocks to the other program.

Summary: **Retaining:** **Free-Standing:**

Full blocks	173	Full blocks	0
Half blocks	3	6" Cap	0
End blocks	0	Half blocks	1
2' x 4' x 7" Step	0	Corner blocks	11
Square Feet	1003	**Square Feet**	66.125

Retaining Wall Blocks	176		
Freestanding Wall Blocks	12		
Steps & Caps	0.0	**Total Square feet**	1070
Columns	0		
Total Blocks	188		

Project Notes: grey ledgestone texture

Retaining Series Legend

41" Hollow Corre

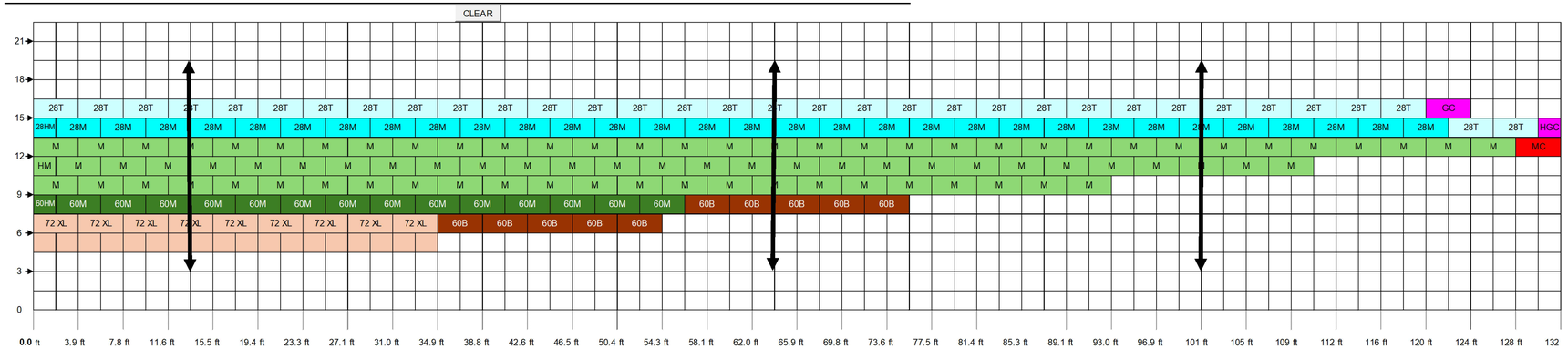
		28" BLOCKS							
28T	28" Top	33	P	Planter	0	ET	End Top	0
28HT	28" Half Top	0	HP	Half Planter	0	EM	End Middle	0
M	41" Middle	85	28M	28" Middle	31	D	Drain	0	EB	End Bottom	0
HM	41" Half Middle	1	28HM	28" Half Middle	1	HD	Half Drain	0	7" Step	0.0
B	41" Bottom	0	28B	28" Bottom	0	PP	Protruding Planter	0	CS	7" Curved Step	0.0
HB	41" Half Bottom	0	28HB	28" Half Bottom	0	CT	Curb Top	0			
		60" BLOCKS			**42" WIDE BLOCK**			**9" SETBACK BLOCKS**	
60M	60" Middle	14	42 top	42" wide top	0		9" SB Middle	0
60HM	60" Half Middle	1	42 M	42" wide middle	0		9" SB Half Middle	0
60B	60" Bottom	10			0			
60HB	60" Half Bottom	0			0			
					0			

Column Series Legend

C	Column	0
EC	End Column	0
LC	Line Column	0
CC	Corner Column	0
	CAP Column Cap	0

Free-Standing Series Legend:

				CORNER BLOCKS					
FST	FS Top	0	FG	FS Garden	0	GC	Garden Corner	1	BGC	Bottom Garden Corner	0
CFT	Curved Top	0	CFG	Curved Garden	0	HGC	Half Garden Corner	1	BFC	Bottom Flat Corner	0
FM	FS Middle	0	GB	Garden Bottom	0	FC	Flat Corner	0	BC	Bottom Corner	0
CFM	Curved Middle	0	FTB	Flat-Top Bottom	0	HFC	Half Flat Corner	0		9" SB Left Corner	0
FB	FS Bottom	0	CFTB	Curved FlatTop Bottom	0	MC	Middle Corner	1	52 XL	52" XL	0
CFB	Curved Bottom	0	CAP	6" Cap	0	HMC	Half Middle Corner	0	72 XL	72" XL	9
			[HCAP]	Half Cap	0				96 XL	96" XL	0



RETAINING WALL CONSTRUCTION DIAGRAM & SUMMARY

N.T.S.

NOTE:
DIAGRAM AND SUMMARY OF RETAINING WALL AS SHOWN ON THIS SHEET IS FOR REFERENCE ONLY. CONTRACTOR TO VERIFY ALL MATERIAL AND DESIGN INFORMATION WITH RETAINING WALL SUPPLIER.

CIVIL ENGINEER
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LAND SURVEYORS
LAND PLANNERS
NF ENGINEERS
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PONTIAC, MI 48342-5032
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DTMB PROJECT #	511/25039
ARCH PROJECT #	15460.1
DRAWN BY	EO
DESIGNED BY	MW
JC/ENG BY	SS

C11