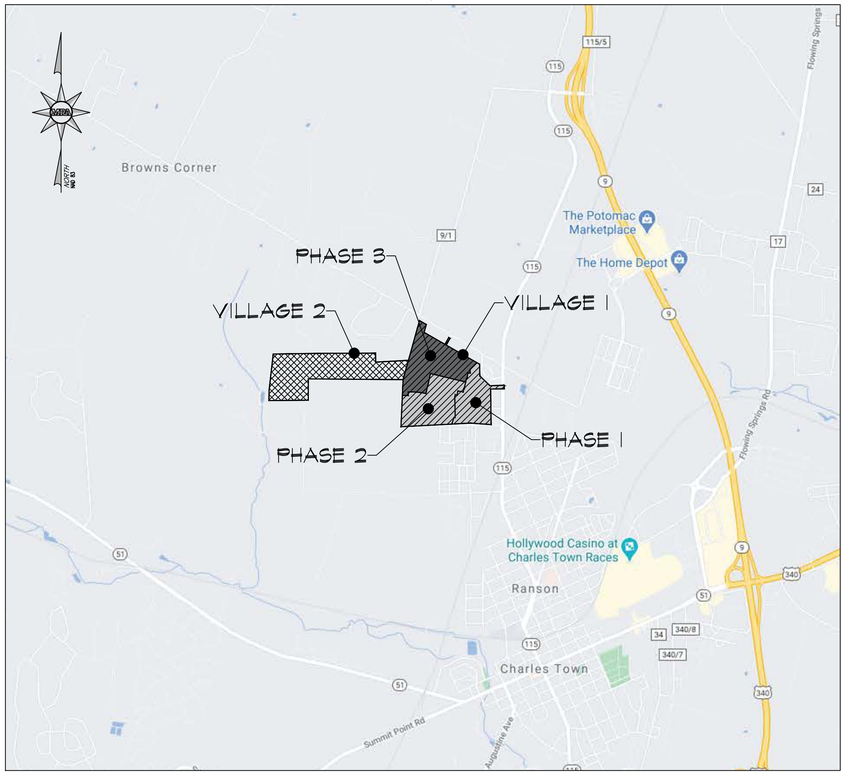
HUNTWELL WEST

VILLAGE 1 - PHASE 3

CONSTRUCTION DRAWINGS

25-16-CD

CITY OF RANSON, WEST VIRGINIA



VICINITY MAP
SCALE: 1"=2000'

GENERAL NOTES

1. THE PROPERTY DELINEATED HEREON IS NOW IN THE NAME OF 300N LLC AMONG THE LAND RECORDS OF JEFFERSON COUNTY, WEST VIRGINIA.
2. EXISTING TOPOGRAPHY SHOWN IS BASED ON A FIELD RUN SURVEY PERFORMED BY MORRIS & RITCHIE ASSOCIATES, INC. IN NOVEMBER 2020 AND AERIAL TOPOGRAPHY PERFORMED BY THRASHER. HORIZONTAL DATUM IS BASED ON NAD83 AND VERTICAL DATUM IS BASED ON NAD 88.
3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE PROVIDED IN ACCORDANCE WITH THE "WEST VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK".
4. THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE DEVELOPER OR HIS AGENT OF ANY LEGAL RESPONSIBILITY WHICH MAY BE REQUIRED BY THE CODE OF WEST VIRGINIA OR ANY OTHER ORDINANCE ENACTED BY THE CITY OF RANSON.
5. ALL UNDERGROUND UTILITIES WITHIN STREET RIGHT-OF-WAYS SHALL BE INSTALLED TO THE REQUIRED DISTANCE BEYOND THE RIGHT-OF-WAY LINE PRIOR TO THE INSTALLATION OF ANY SUB SURFACE MATERIAL, CURB AND GUTTER, OR SIDEWALK.
6. CONTRACTORS SHALL ARRANGE FOR THE LOCATION OF ALL UNDERGROUND FACILITIES PRIOR TO THE CONSTRUCTION INCLUDING TEST HOLES TO PHYSICALLY LOCATE UNDERGROUND UTILITIES AS NECESSARY. SEE TEST PIT NOTE ON SHEET 2.
7. THESE PLANS MAKE NO REPRESENTATION AS TO SUBSURFACE CONDITIONS AND THE PRESENCE OF SUBSURFACE WATER OR THE NEED FOR SUBSURFACE DRAINAGE FACILITIES.
8. THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING UTILITIES, AS SHOWN HEREON, ARE APPROXIMATE ONLY. NO GUARANTEE IS HEREIN MADE OR IMPLIED THAT ALL EXISTING UNDERGROUND UTILITIES ARE SHOWN. IT SHALL BE THE CONTRACTOR'S AND/OR THE OWNER'S RESPONSIBILITY TO CONTACT UTILITY COMPANIES AND TO VERIFY THE TYPE, SIZE, AND LOCATION OF ALL EXISTING UTILITIES PRIOR TO STARTING THE WORK. ANY DISCREPANCIES IN OR FROM THE INFORMATION SHOWN HEREON SHALL BE REPORTED TO MORRIS & RITCHIE ASSOCIATES, INC. PRIOR TO COMMENCING CONSTRUCTION.
9. IN ORDER TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF A GIVEN UTILITY AND TO ASSIST THE CONTRACTOR AND/OR OWNER IN DETERMINING AREAS OF SPECIAL CONCERN, MORRIS & RITCHIE ASSOCIATES, INC. HAS INDICATED HEREON CERTAIN LOCATIONS WHERE TEST PITS SHOULD BE EXCAVATED PRIOR TO COMMENCING CONSTRUCTION. THESE INDICATIONS ARE NOT INTENDED TO BE ALL INCLUSIVE AND WILL NOT RELIEVE THE CONTRACTOR AND/OR OWNER OF THE RESPONSIBILITY OF DIGGING ADDITIONAL TEST PITS, AS MIGHT BE REQUIRED BY ACTUAL SITE CONDITIONS. ANY DISCREPANCIES FOUND BETWEEN ACTUAL AND ASSUMED CONDITIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF MORRIS & RITCHIE ASSOCIATES, INC. SEE TEST PIT NOTE ON SHEET 2
10. APPROVAL OF THIS PLAN DOES NOT GRANT APPROVAL TO TRESPASS ON OFF-SITE PROPERTY.
11. WATER AND SEWER UTILITIES SHALL BE INSTALLED IN CONFORMANCE TO CHARLES TOWN UTILITY BOARD AND WEST VIRGINIA AMERICAN WATER.
12. THE APPROVAL OF THESE PLANS SHALL NOT RELIEVE THE OWNER OF COMPLYING WITH OTHER APPLICABLE LOCAL, STATE, & FEDERAL REQUIREMENTS.
13. DURING ALL CONSTRUCTION STAGES, ACCESS FOR FIRE AND RESCUE VEHICLES AND ADEQUATE STANDPIPE SYSTEMS WILL BE PROVIDED. THIS COMMITMENT DOES NOT RELIEVE THE OWNERS FROM COMPLYING WITH ALL OTHER LEGAL REQUIREMENTS RELATING TO FIRE AND RESCUE ACCESS AND SYSTEMS.
14. A PRECONSTRUCTION MEETING, INCLUDING MRA, CITY OF RANSON PERSONNEL, WV DEPARTMENT OF HIGHWAYS, CHARLES TOWN UTILITY BOARD, AND WEST VIRGINIA AMERICAN WATER IS REQUIRED PRIOR TO THE START OF CONSTRUCTION. A 5 DAY MINIMUM NOTICE IS REQUIRED.
15. CONTRACTOR TO SCHEDULE INSPECTIONS WITH CITY STAFF A MINIMUM OF 5 DAYS IN ADVANCE. CONTACT CITY STAFF AT 304-725-1010.
16. NECESSARY PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR TO PROTECT EXISTING SERVICES AND MAINS, AND ANY DAMAGE TO THEM DUE TO HIS NEGLIGENCE SHALL BE REPAIRED IMMEDIATELY AT HIS OWN EXPENSE.
17. THE CONTRACTOR SHALL NOTE THAT IN CASE OF A DISCREPANCY BETWEEN THE SCALED AND THE FIGURED DIMENSIONS SHOWN ON THESE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN. MRA SHOULD BE CONTACTED TO RESOLVE DISCREPANCY
18. IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO PERFORM SUCH WORK.
19. CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
20. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING AGENCIES AT LEAST (5) FIVE WORKING DAYS BEFORE STARTING WORK SHOWN ON THESE DRAWINGS:
    A. MISS UTILITY 811
    B. CHARLES TOWN UTILITY BOARD
    C. WEST VIRGINIA AMERICAN WATER REQUIRES 2 WEEKS NOTICE FOR INSPECTION OF INSTALLATION. INSPECTION FEES WILL APPLY.
21. ALL REFERENCES TO TAMPED FILL WITHIN THIS PLAN SET THAT REFER TO AASHTO DESIGNATION T-180 METHOD-C AND/OR ASTM D-1557 SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% IN ACCORDANCE WITH ASTM D-698 IN MAXIMUM 8 INCH LIFTS. ALL COMPACTION MUST COMPLY WITH ARTICLE 16 SECTION 2-307.
22. THIS PROJECT IS SERVED BY PUBLIC WATER AND SEWER.
23. CONTRACTOR SHALL VERIFY TO HIS SATISFACTION, THE FINAL EARTHWORK NUMBERS PRIOR TO COMMENCEMENT OF SITE WORK. MRA MAKES NO GUARANTEE THAT ON SITE SOILS WILL BE SUITABLE FOR STRUCTURAL FILL, OR THAT THE EARTHWORK WILL BALANCE. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE ACTUAL EARTHWORK NUMBERS ENCOUNTERED DURING CONSTRUCTION.
24. ALL SPOT ELEVATIONS ALONG PROPOSED CURB AND GUTTER ARE TOP OF CURB ELEVATIONS UNLESS OTHERWISE NOTED.
25. IF ANY ARCHEOLOGICAL, HISTORIC RESOURCES OR CEMETERIES ARE DISCOVERED DURING EXCAVATION THE CONTRACTOR SHALL STOP WORK IMMEDIATELY IN THE AREA OF DISCOVERY AND NOTIFY THE CITY OF RANSON AND MORRIS & RITCHIE ASSOCIATES, INC. NO FURTHER WORK IN THE AREA SHALL BE PERMITTED UNTIL RELEASED BY THE CITY OF RANSON AND MORRIS & RITCHIE ASSOCIATES, INC.
27. ANY MONUMENT SIGNAGE THAT WILL BE LIT MUST BE REVIEWED AND APPROVED BY THE CITY OF RANSON PRIOR TO INSTALLATION.

THE OWNER OF THIS PROPERTY HEREBY AFFIRMS THAT THESE PLANS MEET THE REQUIREMENTS OF THE RANSON ZONING AND SUBDIVISION ORDINANCES AND THE ABOVE CONDITIONS OF APPROVAL SET FORTH BY THE RANSON PLANNING COMMISSION.

OWNER'S SIGNATURE _____ DATE _____

PLANNING COMMISSION APPROVAL

WITH THE APPROVAL OF A GENERAL DEVELOPMENT PLAN DATED 06-16-2021, ASSOCIATED CONSTRUCTION DRAWINGS DATED 06-16-2021, AND DEVELOPMENT AGREEMENT DATED 06-16-2021, THIS PLAT MEETS THE REQUIREMENTS OF THE SUBDIVISION ORDINANCES OF THE CITY OF RANSON AND HAS BEEN APPROVED FOR RECORDATION BY THE CITY OF RANSON PLANNING COMMISSION.

PLANNING COMMISSION PRESIDENT _____ DATE _____

APPLICANT/OWNER
HUNTWELL WV, LLC
PO BOX 1875
MARTINSBURG, WV 25402
CONTACT: HUNTER WILSON
304-901-4931
HWILSON@HILLCRESTREALTY.US

PREPARED BY
MORRIS & RITCHIE ASSOCIATES, INC.
205 E. HIRST ROAD, SUITE 106
PURCELLVILLE, VIRGINIA 20132
CONTACT: TODD HECK
703-994-4047
THECK@MRAGTA.COM

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PROJECT NOTES

1. TAX MAP NUMBER: MAP 9 AND MAP 9B
2. PARCEL NUMBERS: 08009BPCLA0000, 08009BPCLB0000, 08009BPCLC0000, AND 08000900050000
3. TOTAL AREA OF PARCELS: 190.09 AC
4. EXISTING USES: FARMING/AGRICULTURAL
5. PROPOSED USE: RESIDENTIAL
6. ZONING: SC-NC
7. LOCATION: SOUTHEAST OF THE INTERSECTION OF ROUTE 115 AND OLD LEETOWN PIKE
8. DEVELOPMENT AREA (PHASE 3 BOUNDARY): 40.51 AC
9. AREA OF DISTURBANCE (PHASE 3 LOD): 117.62 AC
10. NUMBER OF UNITS PROPOSED (PHASE 2):
    SINGLE FAMILY DETACHED 39' X 50' (FRONT LOAD GARAGE)= 115
    SINGLE FAMILY ATTACHED 20' X 36' (FRONT LOAD GARAGE)= 100
    TOTAL LOTS = 215
11. DEVELOPMENT PLAN & PLAT APPROVED JUNE 16, 2021
    RZNG-21-013 & LDPP-21-025

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
205 E. HIRST ROAD, SUITE 106
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PHONE: (703) 994-4047
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RICHARD J. DYER REGISTERED 20684 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

COVER SHEET

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: AS NOTED
DESIGN BY: AS NOTED
REVIEW BY: RJD
SHEET: 1 OF 71

UTILITY CONTACT NUMBERS		
UTILITY	UTILITY COMPANY	PHONE NUMBER
WATER	WEST VIRGINIA AMERICAN WATER	681-240-4192
SANITARY SEWER	CHARLES TOWN UTILITY BOARD	304-725-2316
ELECTRIC	POTOMAC EDISON COMPANY	800-686-0011
CABLE	COMCAST	888-266-2278
PHONE	FRONTIER COMMUNICATIONS	304-728-8500
CABLE/PHONE	SHENTEL	800-743-6835
GAS	THOMPSON GAS	304-725-9776
OTHER	WV 811	811 OR 800-245-4848

TEST PIT NOTE:

⊕ = TEST PIT REQUIRED
(SEE GRADING SHEETS)

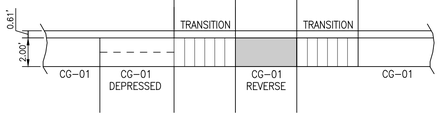
IN ORDER TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF A GIVEN UTILITY AND TO ASSIST THE CONTRACTOR AND/OR OWNER IN DETERMINING AREAS OF SPECIAL CONCERN, MRA., HAS INDICATED HEREON CERTAIN LOCATIONS WHERE TEST PITS SHOULD BE EXCAVATED PRIOR TO COMMENCING CONSTRUCTION. THESE INDICATIONS ARE NOT INTENDED TO BE ALL INCLUSIVE AND WILL NOT RELIEVE THE CONTRACTOR AND/OR OWNER OF THE RESPONSIBILITY OF DIGGING ADDITIONAL TEST PITS, AS MIGHT BE REQUIRED BY ACTUAL SITE CONDITIONS. ANY DISCREPANCIES FOUND BETWEEN ACTUAL AND ASSUMED CONDITIONS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF MRA BY CALLING 703-994-4047. FURTHERMORE, TEST PITS HAVE BEEN PLACED WHERE KNOWN UTILITIES EXIST. UPON CALLING WV 811, SHOULD THE CONTRACTOR IDENTIFY EXISTING UTILITIES NOT SHOWN ON OUR PLAN, MRA MUST BE CALLED IMMEDIATELY AT 703-994-4047.

ROADWAY NOTES:

1. A SMOOTHING GRADE SHALL BE MAINTAINED FROM THE CENTERLINE OF THE EXISTING ROAD TO THE PROPOSED CURB AND GUTTER, TO PRECLUDE THE FORMING OF FALSE GUTTERS AND/OR THE PONDING OF ANY WATER ON THE ROADWAY.
2. ADDITIONAL STANDARD GUARDRAIL AND HANDRAIL SHALL BE INSTALLED AT HAZARDOUS LOCATIONS AS DESIGNATED DURING FINAL FIELD INSPECTIONS BY THE CITY OF RANSON OR WVDOH. SHOULDER SHALL BE WIDENED PER WVDOH STANDARDS.
3. SIDEWALKS AND TRAILS SHALL BE CONSTRUCTED ON A SUBGRADE COMPACTED TO 95% DENSITY AT OPTIMUM MOISTURE CONTENT.
4. FOR DITCH AND SHOULDER ROADWAY SECTIONS THE BACK SLOPE OF THE DITCH (WLBK.) SHALL EXTEND UP AT A SLOPE OF 3:1 FOR A DISTANCE EQUAL TO THE DEPTH OF THE DITCH ASSOCIATED WITH THE FRONT SLOPE (WLFRNT.).
5. SIDEWALKS SHALL BE CONSTRUCTED ON A FOUR (4") INCH THICK LAYER OF WVDOH BED COURSE MATERIAL CLASS 1 OR 3.
6. PAVEMENT SECTIONS SHOWN ARE "PRELIMINARY ONLY" AND SUBJECT TO REVISION BASED ON FINAL PAVEMENT DESIGN PER GIVEN ROAD CLASSIFICATION UTILIZING ACTUAL FIELD CBR VALUES.

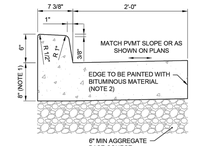
CONCRETE CURB & GUTTER DETAILS:

NOT TO SCALE



CURB & GUTTER DETAILS

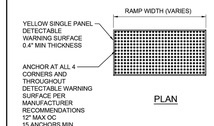
NOTES:
1. 6" GRADED AGGREGATE BASE AND COMPACTED SUBGRADE SHALL BE INSTALLED UNDER CURB CONSISTENT WITH PAVEMENT TYPICAL SECTIONS.
2. CONCRETE SHALL BE GRADE A 4,000 PSI.
3. CONSTRUCTION OF CONCRETE CURBING SHALL BE BY THE "SEPARATE METHOD" WHEN SAWED JOINTS ARE CONSTRUCTED IN THE PAVEMENT.
4. ALL CURB JOINTS SHALL BE MADE BY ACCEPTABLE FORMING METHODS.
5. WHERE CURB & GUTTER ABUTS CONCRETE PAVEMENT A LONGITUDINAL JOINT WITH TIE BARS OR TIE BOLT ASSEMBLIES SHALL BE CONSTRUCTED AT THE EDGE IN LIEU OF PAINTED BITUMINOUS MATERIAL.



NOTES:
1. MATCH THICKNESS OF PAVEMENT WHEN ABUTTING CONCRETE PAVEMENT.
2. DOES NOT APPLY WHEN ABUTTING CONCRETE PAVEMENT. INSTEAD A LONGITUDINAL JOINT WITH TIE BARS OR TIE BOLT ASSEMBLIES SHALL BE CONSTRUCTED AT THIS LOCATION.
3. ALL CURB JOINTS SHALL BE MADE BY ACCEPTABLE FORMING METHODS.

RANSON	COMBINATION CURB AND GUTTER POSTED SPEED ≤ 25 MPH CITY OF RANSON, WEST VIRGINIA	DETAIL NO.	SHEET NO.	REVISION DATE
		CG-01	1 OF 1	12/1/2023

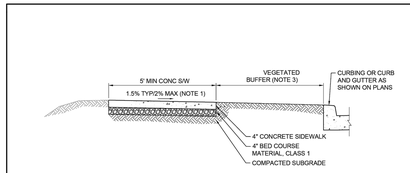
NOT TO SCALE



NOTES:
1. PROPOSED DETECTABLE WARNING SURFACE AND PANEL ANCHORING PLAN SHALL BE SUBMITTED TO THE CITY FOR APPROVAL PRIOR TO INSTALLATION.
2. CAST-IN-PLACE DETECTABLE WARNING PANELS ARE PREFERRED FOR NEW CONSTRUCTION. SURFACE ANCHOR PANELS MAY BE USED WHEN RETROFITTING EXISTING CURB RAMPS.
3. INSTALL DETECTABLE WARNING SURFACE PER MANUFACTURER'S INSTRUCTIONS.
4. FOR NEW CONSTRUCTION, DEPRESS CONCRETE UNDER DETECTABLE WARNING PANEL SO PANEL IS FLUSH WITH SURROUNDING CONCRETE. FOR RETROFIT INSTALLATIONS, PROVIDE DETECTABLE WARNING SURFACE WITH BEVELED EDGES TO ENSURE SURFACE DISCONTINUITY IS LESS THAN 0.25"

NOT TO SCALE

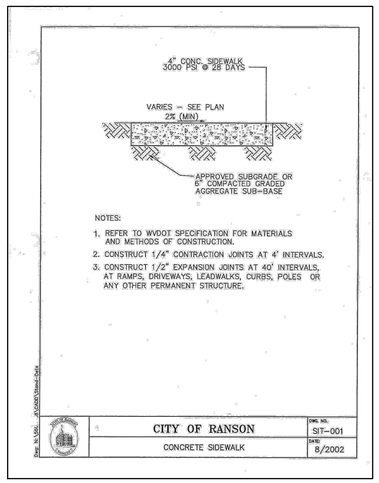
RANSON	DETECTABLE WARNING SURFACE CITY OF RANSON, WEST VIRGINIA	DETAIL NO.	SHEET NO.	REVISION DATE
		SW-03	1 OF 1	12/1/2023



NOTES:
1. SIDEWALK CROSS SLOPE OF 2% IS ABSOLUTE MAX. THERE IS NO CONSTRUCTION TOLERANCE FOR INCREASED CROSS-SLOPE IN EXCESS OF 2%.
2. MAXIMUM ALLOWABLE LONGITUDINAL SLOPE IS 5% OR SLOPE OF ADJACENT ROADWAY, WHICHEVER IS GREATER.
3. SUBJECT TO APPROVAL BY THE CITY, VEGETATED BUFFER MAY BE OMITTED WHERE SIDEWALK IS ADJACENT TO A PARKING LANE OR A BIKE LANE.

NOT TO SCALE

RANSON	CONCRETE SIDEWALK WITH BUFFER CITY OF RANSON, WEST VIRGINIA	DETAIL NO.	SHEET NO.	REVISION DATE
		SW-01	1 OF 1	12/1/2023



NOTES:
1. REFER TO WVDOT SPECIFICATION FOR MATERIALS AND METHODS OF CONSTRUCTION.
2. CONSTRUCT 1/4" CONTRACTION JOINTS AT 4' INTERVALS.
3. CONSTRUCT 1/2" EXPANSION JOINTS AT 40' INTERVALS, AT RAMPS, DRIVEWAYS, LEADWALKS, CURBS, POLES OR ANY OTHER PERMANENT STRUCTURE.

CITY OF RANSON	DWG. NO. SIT-001
CONCRETE SIDEWALK	DATE 8/2002

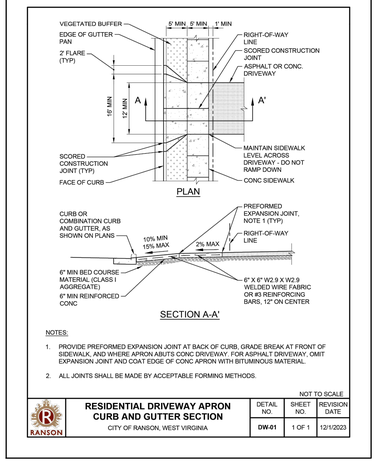
CONCRETE NOTE:

THE CONTRACTOR SHALL VERIFY CONCRETE FORM PLACEMENT TO ASSURE COMPLIANCE WITH CURRENT LOCAL AND STATE ADA AS WELL AS BUILDING CODES. ADA INSPECTION SHALL BE REQUIRED PRIOR TO POURING CONCRETE. THE CONTRACTOR ACCEPTS RESPONSIBILITY FOR MEETING ALL APPLICABLE HANDICAP SLOPE AND DISTANCE REQUIREMENTS AS WELL AS OTHER REQUIREMENTS AS STATED IN THE APPLICABLE CODES.

ANY DISCREPANCIES FOUND SHOULD BE BROUGHT TO THE SITE ENGINEER'S ATTENTION BEFORE ANY CONCRETE IS PLACED.

GENERAL NOTES:
1. CONTRACTOR TO MAINTAIN ACCESS TO ADJACENT PROPERTIES AT ALL TIMES.
2. IF ROAD, SHOULDER, OR SIDEWALK CLOSURES OCCUR WHILE HOMES ARE OCCUPIED, DETOURS SHALL BE IN ACCORDANCE WITH PRONAG.

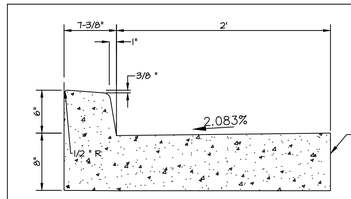
UTILITY NOTES:
1. ALL SANITARY SEWER AND WATERLINE MUST BE IN ACCORDANCE WITH CHARLES TOWN UTILITY BOARD SEWER SPECIFICATIONS AND WEST VIRGINIA AMERICAN WATER SPECIFICATIONS.
2. ALL SANITARY SEWER EASEMENTS SHALL BE DEDICATED TO THE CHARLES TOWN UTILITY BOARD.



NOTES:
1. PROVIDE PREFORMED EXPANSION JOINT AT BACK OF CURB, GRADE BREAK AT FRONT OF SIDEWALK, AND WHERE APRON ABUTS CONC DRIVEWAY. FOR ASPHALT DRIVEWAY, OMIT EXPANSION JOINT AND COAT EDGE OF CONC APRON WITH BITUMINOUS MATERIAL.
2. ALL JOINTS SHALL BE MADE BY ACCEPTABLE FORMING METHODS.

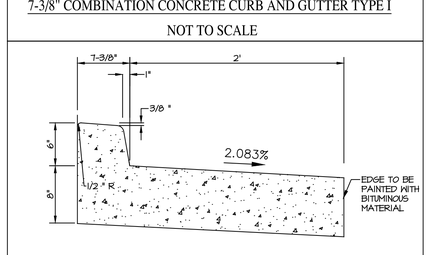
NOT TO SCALE

RANSON	RESIDENTIAL DRIVEWAY APRON CURB AND GUTTER SECTION CITY OF RANSON, WEST VIRGINIA	DETAIL NO.	SHEET NO.	REVISION DATE
		DW-01	1 OF 1	12/1/2023



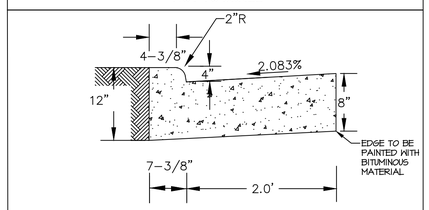
7-3/8" COMBINATION CONCRETE CURB AND GUTTER TYPE I

NOT TO SCALE



7-3/8" COMBINATION CONCRETE CURB & GUTTER TYPE I REVERSE

NOT TO SCALE



NOTES:
1. CONCRETE SHALL BE CLASS A3 IN PLACE, 3000 PSI
2. EXPANSION JOINT AND #3 BAR DOWELS @24" O.C. IF ADJACENT TO OTHER CONCRETE AREAS. (TYP. ALL CURBS)

DEPRESSED CURB & GUTTER

NOT TO SCALE

DEPRESSED CURB TO BE INSTALLED ALONG FRONTAGE OF ALL TOWNHOUSE UNITS

LEGEND

- EX. R/W LINE
- EX. PROPERTY LINE
- EX. ADJ. PROPERTY LINE
- EX. 10' CONTOUR
- EX. 2' CONTOUR
- SOILS LINE
- EX. ZONING LINE
- EX. FENCE LINE
- EX. STREAM
- EX. EASEMENT
- EX. POND LINE
- EX. FLOODPLAIN
- EX. FLOODPLAIN BUFFER
- EX. CRITICAL AREA
- EX. FOREST BUFFER
- EX. WETLAND LINE
- EX. OVERHEAD LINE
- I.P.F. IRON PIPE FOUND
- I.P.S. IRON PIPE SET
- I.R.F. IRON REBAR FOUND
- I.R.S. IRON REBAR SET
- x50.32 EX. SPOT ELEVATION
- PROP. R/W LINE
- PROP. PROPERTY LINE
- PROP. LOT LINE
- PROP. 1' CONTOUR
- PROP. 2' CONTOUR
- PROP. 10' CONTOUR
- PROP. TREE LINE
- PROP. FOREST CONSERVATION L
- PROP. BUILDING
- PROP. BLDG SETBACK LINE
- PROP. CURB
- PROP. ROAD CENTER LINE
- PROP. LIMITS OF DISTURBANCE
- PROP. SEPTIC RESERVE AREA
- PROP. EASEMENT LINE
- PROP. METAL FENCE
- PROP. WOOD FENCE
- PROP. SANITARY LINE
- PROP. STORM DRAIN
- PROP. WATER LINE
- PROP. SWALE CENTER LINE
- PROP. OVERHEAD LINE
- PROP. UNDERGROUND CONDUIT
- PROP. CABLE TV LINE
- PROP. ELECTRIC LINE
- PROP. GAS LINE
- REINFORCED SILT FENCE
- SILT FENCE
- SUPER SILT FENCE
- PROP. HYDRANT
- PROP. VALVE
- PROP. SIAMESE CONNECTION
- 526.91 PROP. SPOT ELEVATION
- PROP. SIGN
- PROP. LIGHT POLE

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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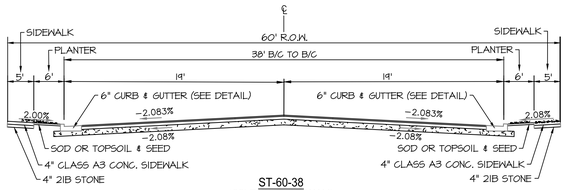
RICHARD J. DYER REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

SITE NOTES

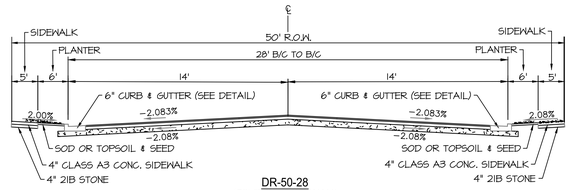
HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 2 OF 71

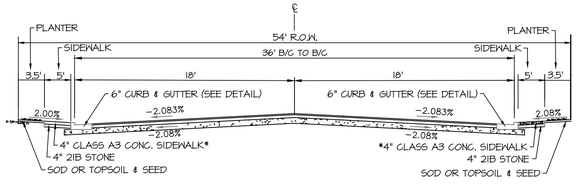
ASSEMBLIES AND FRONTAGES



ST-60-38
(60' RIGHT-OF-WAY)
2 LANES UNDIVIDED WITH ON STREET PARKING
NOT TO SCALE

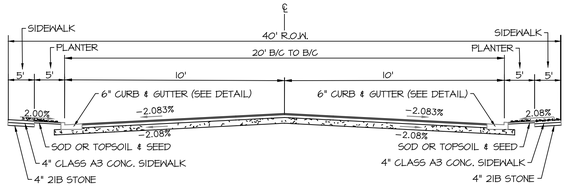


DR-50-28
(50' RIGHT-OF-WAY)
2 LANES UNDIVIDED WITH 1 LANE ON STREET PARKING
NOT TO SCALE

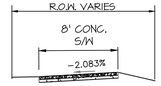


ST-54-36
(54' RIGHT-OF-WAY)
2 LANE UNDIVIDED WITH ON STREET PARKING
NOT TO SCALE

*SIDEWALK SUBJECT TO CHANGE ADJACENT TO FRONT LOAD HOUSES IN ORDER TO MEET CITY DRIVEWAY STANDARDS.

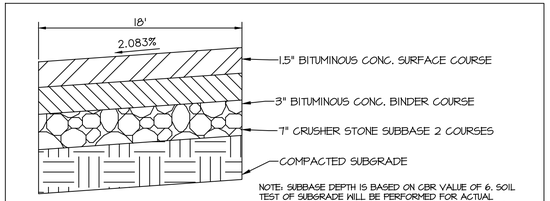


ST-40-20
(40 RIGHT-OF-WAY)
2 LANE UNDIVIDED
NOT TO SCALE



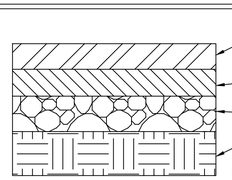
PEDESTRIAN PATHWAY
NOT TO SCALE

TYPICAL ROAD SECTIONS



NOTE: SUBBASE DEPTH IS BASED ON CBR VALUE OF 6. SOIL TEST OF SUBGRADE WILL BE PERFORMED FOR ACTUAL DETERMINATION OF REQUIRED SUBBASE THICKNESS PRIOR TO PLACEMENT OF SUBBASE.

TEMPORARY ROAD SECTION DETAIL
N.T.S



NOTE: SUBBASE DEPTH IS BASED ON CBR VALUE OF 6. SOIL TEST OF SUBGRADE WILL BE PERFORMED FOR ACTUAL DETERMINATION OF REQUIRED SUBBASE THICKNESS PRIOR TO PLACEMENT OF SUBBASE.

PAVEMENT SECTION DETAIL
N.T.S

HUNTWELL WEST - AREA TABULATION

ZONE	REQUIRED %	AREA (SF)	AREA (ACRES)	PROPOSED %
VILLAGE #1 - LOW DENSITY				
T3	20%-60%	3,022,684	69.39	59%
T4	10%-40%	1,918,971	44.05	37%
T5L	0% - 20%	181,967	4.18	4%
Total		5,123,622	117.62	100%

Assembly Designation		ST-60-38	DR-50-28	RA-20-18	ST-40-20	ST-54-36	PP-18-08
Thoroughfare Type		Street	Street	Rear Alley	Street	Street	Pedestrian Path
Transect District		T20, T3, T4, T40, T5L	T2, T2O, T3	T4, T5L	T3,T4	T3, T4, T5L	T2O,T3,T4,T4O,T5L, T5
Right-of-Way Width		60	50	20	40	54	Varies
Pavement Width		38	28	18	20	36	8
Transportation Way							
Vehicular Lane(s)		Two Lanes: two way, one lane each way @ 11 ft	Two Lanes: two way, one lane each way @ 10 ft	Yield Lane: Two way @ 18 ft	Yield Lane: Two way @ 18 ft	Yield Land: Two way @ 16 ft	n/a
Parking Spaces		Two lanes parallel @ 8 ft	One lane parallel @ 8 ft	n/a	n/a	Two lanes parallel @ 8 ft	n/a
Striping		Required	Optional	n/a	n/a	Optional	n/a
Median Width		n/a	n/a	n/a	n/a	n/a	n/a
Median Planting		n/a	n/a	n/a	n/a	n/a	n/a
Median Surface		n/a	n/a	n/a	n/a	n/a	n/a
Target Speed		25 mph	25 mph	n/a	25 mph	20 mph	n/a
Bicycle Provision		Sharrow	Sharrow	n/a	Sharrow	Shared lane	n/a
Transit Provision		Bus route	n/a	n/a	n/a	n/a	n/a
Public Frontage							
Assembly Width		11 ft	16.5 ft / 11.5 ft	n/a	11 ft	11 ft	18 ft
Public Frontage Type		D	D	n/a	D	D	n/a
Transect District		T20, T4, T40, T5L	T3		T3, T4	T3, T4, T5L	T3, T4
Curbing	Type	Raised	Raised	Mountable Curb	Raised	Raised	n/a
	Curb Cut	Radius	Radius	Taper	Radius	Radius	n/a
	Radius	15'	20'	n/a	15'	10'	n/a
Walkway	Width	5 ft	5 ft	n/a	5 ft	5 ft	5 ft min.
	Surface	Concrete	Concrete	n/a	Concrete	Concrete	Asphalt/Pervious
Planter	Type/Size	Continuous/6 ft	Continous/ 10 ft	n/a	Continuous/6 ft	Continuous / 4 ft	Continuous / Variable
	Arrangement	Regular	Regular	n/a	Regular	Regular	Clustered
	Species	Alternating	Alternating	n/a	Alternating	Alternating	Varied
	Spacing	40 ft o.c. avg.	30 ft o.o.	n/a	40 ft o.c. avg.	40 ft o.c. avg (T3) 30 ft o.c. avg (T4)	Irregular
	Surface	Ground cover or grass	Ground cover or grass	n/a	Ground cover or grass	Ground cover or grass	Grass, ground cover
	Street Tree Size	Large Shade	Large Shade	n/a	Large Shade	Medium shade	Various
	Tree Species	As Shown	As Shown		As Shown	As Shown	As Shown
Verge	Width	5 ft	5 ft	n/a	5 ft	3 ft	n/a
	Lighting Type	Pipe, Column	Pipe, Column	n/a	Pipe, Column	Post, Column	n/a
	Lighting Spacing	100 ft on center min.	At intersections	n/a	At intersections	At intersections	n/a

APPROVED DEVIATIONS & WAIVERS

1. WAIVERS AND DEVIATIONS APPROVED PER DEVELOPMENT PLAN & PLAT APPROVED JUNE 16, 2021 RZNG–21–013 & LDPP–21–025.

DEVIATIONS

1. 5.5.2f – SETBACKS FOR PRINCIPAL BUILDINGS SHALL BE SHOWN IN TABLE 11– TABLE14 AND/OR TABLE 22 AND TABLE 23. DEVIATION TO ALLOW 7' 2" SIDE SETBACKS FOR THE SINGLE–FAMILY UNITS PROPOSED IN T3.

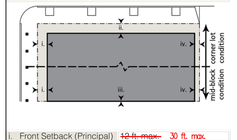
WAIVERS

1. 3.5.4. – BLOCKS ADJACENT TO UNDEVELOPED LAND, AREAS UNSUITABLE FOR DEVELOPMENT, OR PRE–EXISTING INCOMPLETE BLOCKS MAY BE EXEMPT FROM BLOCK FACE LENGTH AND BLOCK PERIMETER REQUIREMENTS BY ADMINISTRATIVE WAIVER IN ACCORDANCE WITH 1.5.3. WAIVER TO ALLOW FOR BLOCKS ADJACENT TO UNDEVELOPED OR UNSUITABLE LAND TO BE EXEMPT FROM BLOCK PERIMETER AND BLOCK FACE LENGTH REQUIREMENTS.

TABLE 14. T5L / T5 STANDARDS

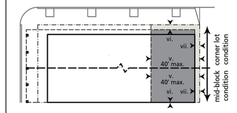
A. BUILDING PLACEMENT

PRINCIPAL BUILDING



i.	Front Setback (Principal)	~~12 ft. max.~~ 30 ft. max.
ii.	Front Setback (Secondary)	~~12 ft. max.~~ 10 ft. max.
iii.	Side Setback	~~5 ft. max.~~ 0 ft. or 6 ft. min. total
iv.	Rear Setback	3 ft. min.

OUTBUILDING



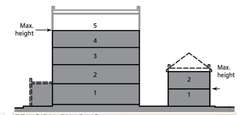
v.	Front Setback (Principal)	40 ft. max. from rear property line
vi.	Side Setback	0 ft. or 3 ft. at corner
vii.	Rear Setback	3 ft. min.

ENCROACHMENTS

i.	Setback Encroachments	
	Open Porch	100% max.
	Balcony and / or Bay Window	100% max.
	Stoop, Lightwell or Terrace	100% max.
ii.	Sidewalk Encroachments	
	Awning or Gallery	100% max.
iii.	Encroachment Depths	
	Open Porch	10 ft. max.
	Balcony and / or Bay Window	6 ft. max.
	Stoop, Lightwell or Terrace	6 ft. max.
	Gallery	within 2 ft. of curb
	Awning	within 2 ft. of curb

B. BUILDING FORM

HEIGHT



PRINCIPAL BUILDING

Stories	4 max., 5 by special exception
To Eave / Parapet	80 ft. max., 90 ft. by special excpetion

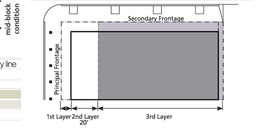
OUTBUILDING BUILDING

Stories	2
To Eave / Parapet	35 ft. max.

MASS

Lot Width	20* ft. min., 150 ft. max.
Lot Coverage	90% max.
Facade Buildout at Setback	60% min. – 100% max.

PARKING AND STORAGE LOCATION



PARKING

1st layer (see Table 15)	~~not permitted~~	permitted
2nd layer (see Table 15)	~~not permitted~~	permitted
3rd layer (see Table 15)	permitted	

TRASH & STORAGE ** LOCATION

1st layer (see Table 15)	~~not permitted~~	permitted
2nd layer (see Table 15)	not permitted	
3rd layer (see Table 15)	permitted	

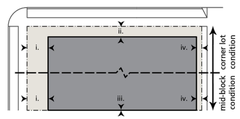
* 16 ft. minimum width is permitted if on site parking is provided.

** Storage includes boats and recreational vehicles.

TABLE 13. T4 / T4O STANDARDS

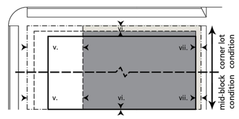
A. BUILDING PLACEMENT

PRINCIPAL BUILDING



i.	Front Setback (Principal)	~~18 ft. max.~~ 30 ft. max.
ii.	Front Setback (Secondary)	10 ft. max.
iii.	Side Setback	0 ft. or 6 ft. min. total
iv.	Rear Setback	3 ft. min.

OUTBUILDING



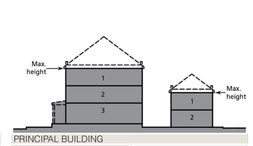
v.	Front Setback (Principal)	40 ft. max. from rear property line
vi.	Side Setback	0 ft. or 3 ft. at corner
vii.	Rear Setback	3 ft. min.

ENCROACHMENTS

i.	Setback Encroachments	
	Open Porch	80% max.
	Balcony and / or Bay Window	80% max.
	Stoop, Lightwell or Terrace	80% max.
ii.	Sidewalk Encroachments	
	Awning or Gallery	80% max.
iii.	Encroachment Depths	
	Open Porch	10 ft. max.
	Balcony and / or Bay Window	6 ft. max.
	Stoop, Lightwell or Terrace	6 ft. max
	Gallery	within 2 ft. of curb
	Awning	within 2 ft. of curb

B. BUILDING FORM

HEIGHT



PRINCIPAL BUILDING

Stories	3
To Eave / Parapet	48 ft. max., 60 ft. max. T4O

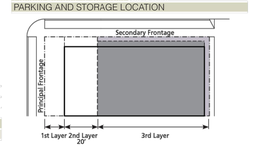
OUTBUILDING BUILDING

Stories	2
To Eave / Parapet	35 ft. max.

MASS

Lot Width	20* ft. min., 96 ft. max.
Lot Coverage	70% max.
Facade Buildout at Setback	60% min.

PARKING AND STORAGE LOCATION



PARKING

1st layer (see Table 15)	~~not permitted~~	permitted
2nd layer (see Table 15)	~~not permitted~~	permitted
3rd layer (see Table 15)	permitted	

TRASH & STORAGE ** LOCATION

1st layer (see Table 15)	~~not permitted~~	permitted
2nd layer (see Table 15)	not permitted	
3rd layer (see Table 15)	permitted	

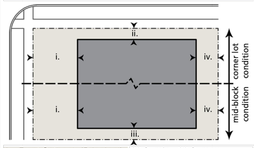
* 16 ft. minimum width is permitted if on site parking is provided.

** Storage includes boats and recreational vehicles.

TABLE 12. T3 STANDARDS

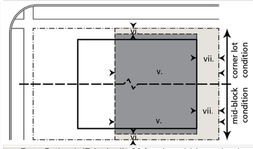
A. BUILDING PLACEMENT

PRINCIPAL BUILDING



i.	Front Setback (Principal)	20 ft. min., 30 ft. max.
ii.	Front Setback (Secondary)	2 ft. min. 12 ft. max.
iii.	Side Setback	0 ft. for duplex or 8 ft. min.
iv.	Rear Setback	24 ft. min.

OUTBUILDING



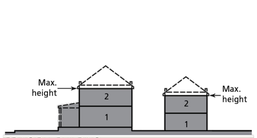
v.	Front Setback (Principal)	20 ft. min. + bldg. setback
vi.	Side Setback	3 ft. or 6 ft. at corner
vii.	Rear Setback	3 ft. min.

ENCROACHMENTS

i.	Setback Encroachments	
	Open Porch	50% max.
	Balcony and / or Bay Window	25% max.
	Stoop, Lightwell or Terrace	n/a
ii.	Sidewalk Encroachments	
	Awning or Gallery	n/a
iii.	Encroachment Depths	
	Open Porch	10 ft. max.
	Balcony and / or Bay Window	6 ft. max.
	Stoop, Lightwell or Terrace	n/a

B. BUILDING FORM

HEIGHT



PRINCIPAL BUILDING

Stories	2
To Eave / Parapet	35 ft. max.

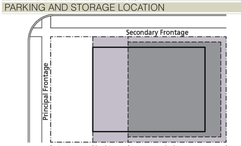
OUTBUILDING BUILDING

Stories	2
To Eave / Parapet	35 ft. max.

MASS

Lot Width	50 ft. min., 150 ft. max.
Lot Coverage	50% max.
Facade Buildout at Setback	n/a

PARKING AND STORAGE LOCATION



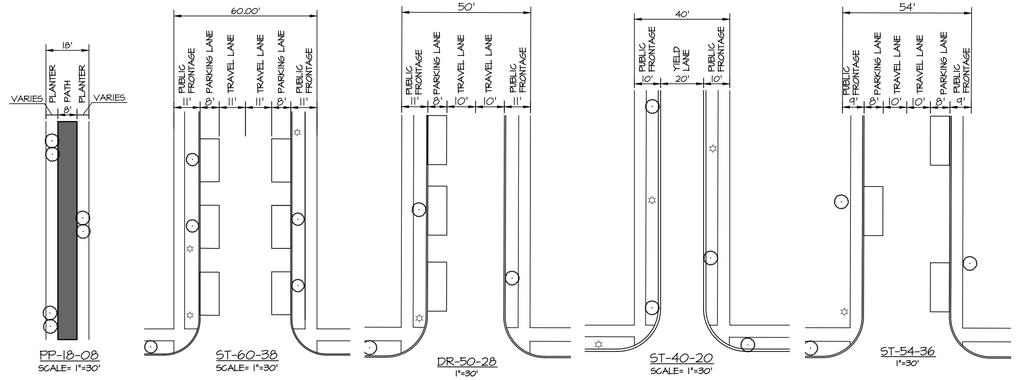
PARKING

1st layer (see Table 15)	not permitted
2nd layer (see Table 15)	side or rear entry permitted
3rd layer (see Table 15)	permitted

TRASH & STORAGE * LOCATION

1st layer (see Table 15)	not permitted
2nd layer (see Table 15)	not permitted
3rd layer (see Table 15)	permitted

* Storage includes boats and recreational vehicles.



DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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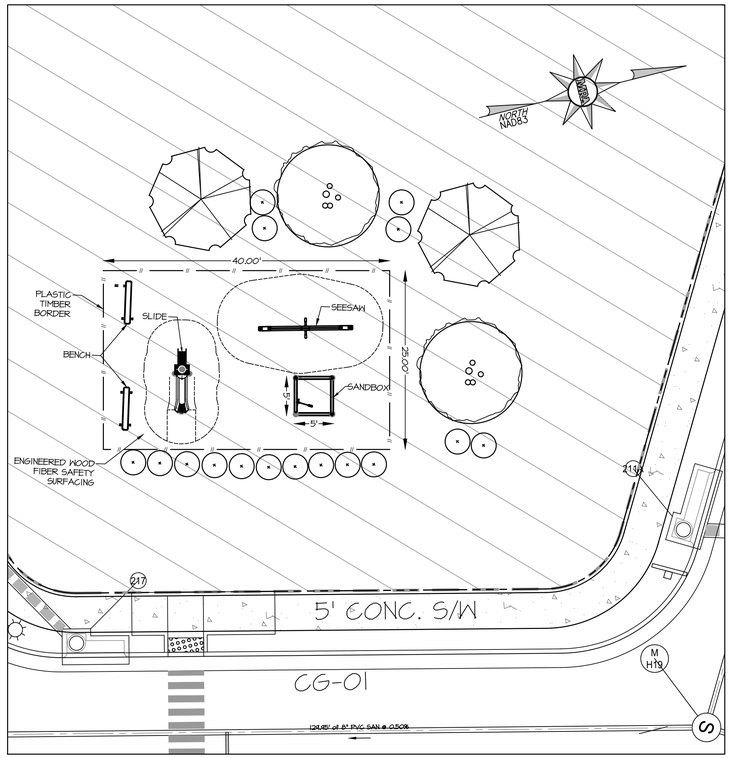
RICHARD J. RYDEN
REGISTERED
20884
STATE OF
PROFESSIONAL ENGINEER
7/28/25

SITE NOTES & DETAILS

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	3 OF 71



PLAYGROUND #3
SCALE: 1"=10'

10 0 10 20 30
Scale 1" = 10'

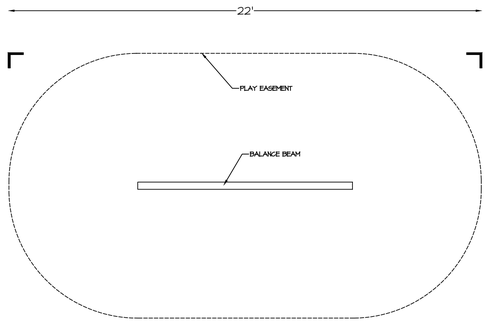
LEGEND

LARGE SHADE TREE

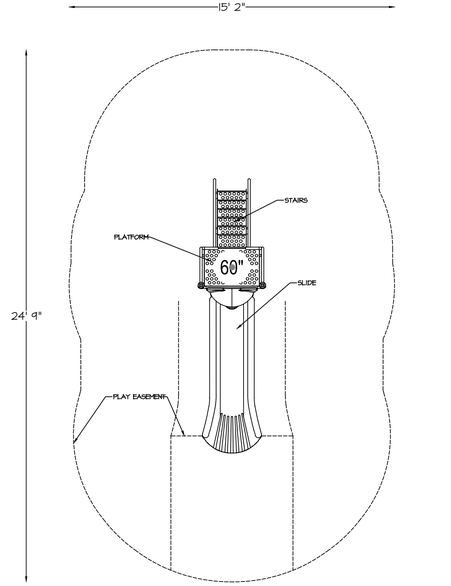
MEDIUM SHADE TREE

SHRUB

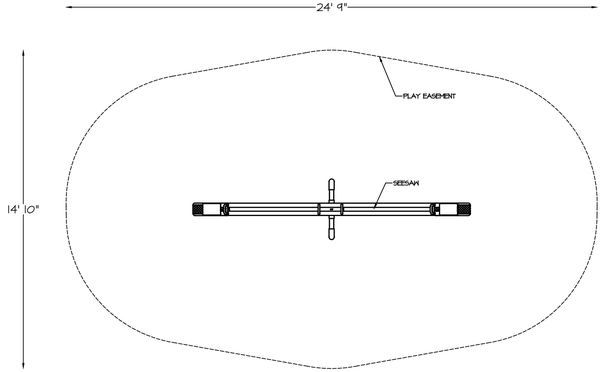
PLAYGROUND	**TREE TYPE**	**SPECIES ARRANGEMENT**	**TOTAL TREE QTY.**
PLAYGROUND #3	Medium Shade Tree	ALTERNATING	4
PLAYGROUND #3	SHRUB	ALTERNATING	16
Note: Specific types of plantings can be found in the "Planting Schedule" in the Landscape Notes & Details sheet.			



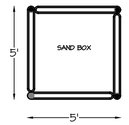
BALANCE BEAM DETAIL
SCALE: 1"=40'



SLIDE DETAIL
SCALE: 1"=40'



SEESAW DETAIL
SCALE: 1"=40'



SAND BOX DETAIL
SCALE: 1"40'

BENCH DETAIL
SCALE: 1"=40'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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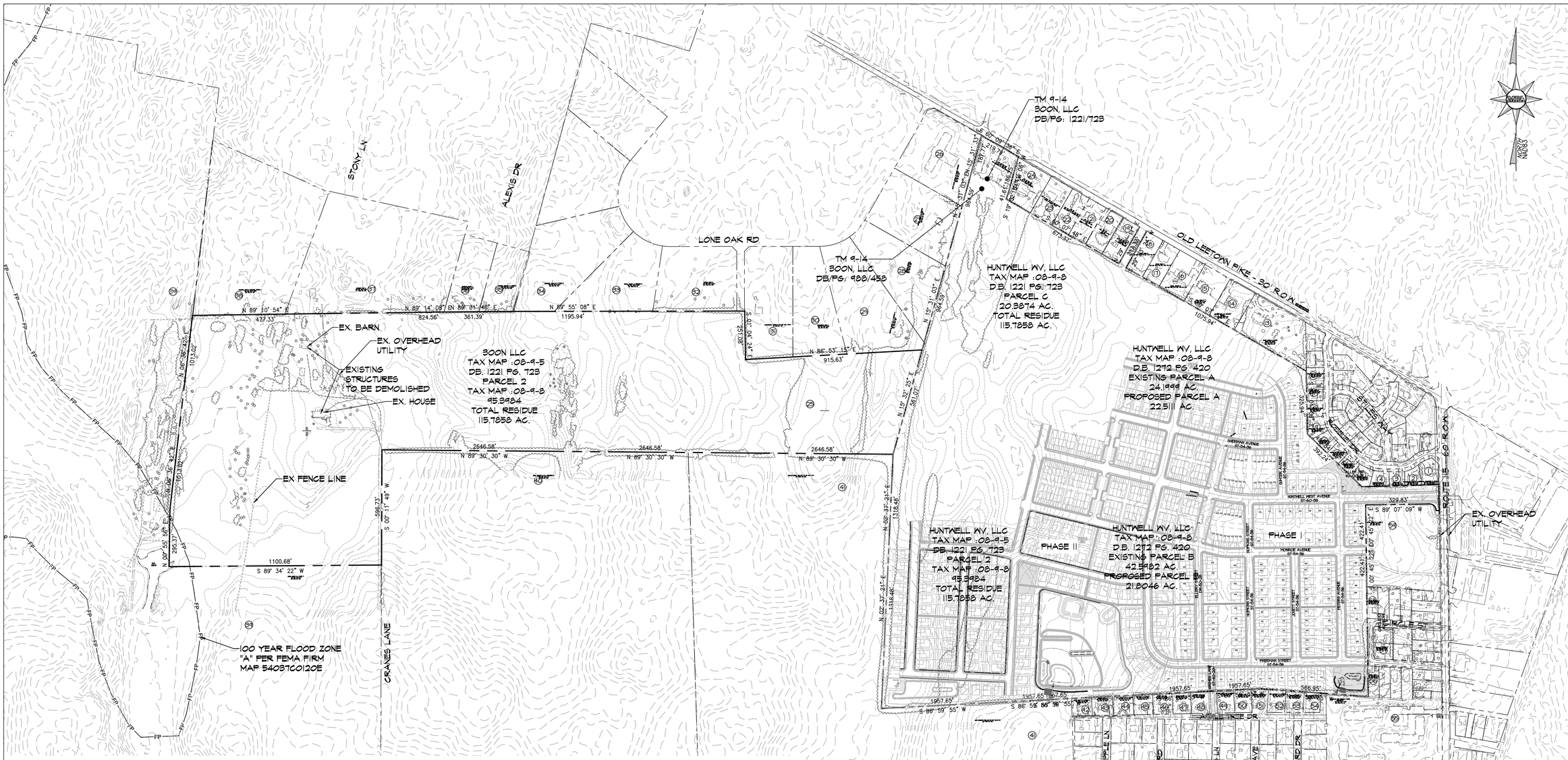
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

PLAYGROUND PLAN & DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: 1" = 30'
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 4 OF 71



Adjacent Parcels Table

No.	Tax Map	Parcel	Name	Deed Book	Deed Page	Land Use
1	7	56	McDonald, Arquimedes & Juanita M	1147	709	Residential
2	7	57	Burkhammer, Jeremy S & April	1017	351	Residential
3	7	58	Webb, Cody W	1176	25	Residential
4	7	59	Schnably, Karen B	993	46	Residential
5	7	60	Nevarez, Hector O	1221	145	Residential
6	7	61	Edwards, Allen W & Hostler, Regina L	966	288	Residential
7	7	62	Martin, Jay A & Christina C	967	329	Residential
8	7	63	Tyrrell, Connie A	964	699	Residential
9	7	64	Lucas, Fred M & Esther J	949	123	Residential
10	7	65	Beall, Joshua M & Kerin	1017	48	Residential
11	7	66	Gant, Justin B	1151	390	Residential
12	7	67	Cox, John S & Shirley, Dias F	944	715	Residential
13	7	39	Valeri, Joyce S & Valeri Family Rev Trust	1131	69	Residential
14	7	40	Cooper, Chad R & Narischa Rattana	1210	416	Residential
15	7	41.1	Hess, Julie S	W815	PG1	Residential
16	7	41	Lester, Richard E	1145	586	Residential
17	7	42	Robey, Brian O	1167	573	Residential
18	7	43	Robey, Brian O	1167	573	Residential
19	7	44	Coulter, Shawn G & Karen S	988	361	Residential
20	7	45	Oden, Ginger L	1201	427	Residential
21	7	46	Hitt, William E & Nancy Lou	251	527	Residential
22	7	47	Hitt, William E & Nancy Lou	254	227	Residential
23	7	48	Shiley, William & Penny	1108	292	Residential
24	7	49	Arroyave, Rafael D ET AL	939	369	Residential
25	9	5	300N LLC	1221	723	Residential
26	7	8.5	First Baptist Church of Ranson Trustees	427	641	Residential
27	7	8.15	Johnson, Dennis K & Deborah	972	559	Residential
28	7	8.22	Anderson, Benjamin	1176	386	Residential
29	7	8.21	Clendenin, Scott E Sr & Samantha E	1144	406	Residential
30	7	8.2	Darlington, Emma J	447	252	Residential

Adjacent Parcels Table

No.	Tax Map	Parcel	Name	Deed Book	Deed Page	Land Use
31	7	8.19	Chicchirichi, Antonio III	670	153	Residential
32	7	8.18	Hottle, John D	1168	295	Residential
33	7	8.17	Childs, James R & Kathleen M	1216	21	Residential
34	7	8.16	Costello, William E & Rhonda D	544	741	Residential
35	7	53.13	Sawyers, Bradley J & Heather	977	565	Residential
36	7	53.14	Traywick, Anthony	1224	593	Residential
37	7	53.9	Cavaleri, Tish A	1029	277	Residential
38	7	53.8	Francois, Filipe & Kowalski, Melissa J	952	267	Residential
39	9	3	Kable, Harry M & Carol F	868	364	Agricultural
40	9	6	Dunn, Stanley W Jr & Katherine B	540	249	Agricultural
41	9	6.1	High Horizons Farm Inc	1208	234	Agricultural
42	7A	180	Armel, John C & Louella L	606	201	Residential
43	7A	181	Watson, Dawn M	781	554	Residential
44	7A	182	Wilt, William D Sr & Alice J	941	44	Residential
45	7A	183	Orr, David & Kimberly	981	749	Residential
46	7A	184	Chaney, Lori Ann	1080	584	Residential
47	7A	185	Thomale, James M II	1211	359	Residential
48	7A	186	Wynkoop, Mary Ann	1065	515	Residential
49	7A	187	Burriss, Elick E Jr & Shirley M	531	29	Residential
50	7A	188	Hawkins, Judy A	460	586	Residential
51	7A	189	Shockney, Malgorzata M	1173	155	Residential
52	7A	190	King, Raymond F & Patricia L	1127	44	Residential
53	7A	191	Garrison, Thomas	1101	251	Residential
54	7A	192	M&D Investment Group LLC	1128	27	Residential
55	1	189	New Apple Tree Gardens I Limited Partnership	1090	42	Commercial
56	7	22	Cross, Linda L	992	325	Residential
57	7	23	Glorfield, Gordon J	973	206	Residential
58	7	35	Chapman, Jennifer J	1149	94	Residential
59	9	7	Kable, Harry M & Carol F	1016	343	Agricultural

NOTES

1. THE PROPERTIES DELINEATED HEREON IS LOCATED ON TAX MAP 9, PARCEL 8 AND PARCEL 14 AND ARE ZONED SC-NC.
2. THE TOTAL ARTEA OF THESE PARCELS IS 117.41 ACRES. PARCELS 14 CONTAINS AN EXISTING RESIDENTIAL HOME AND GARAGE AND PARCEL 8 IS VACANT AND USED FOR AGRICULTURAL USE.
3. THE BOUNDARY SHOWN IS PENDING A FINAL BOUNDARY SURVEY WHICH WILL BE COMPLETED PRIOR TO FINAL SITE PLAN APPROVAL.
4. THE PLATS WERE PREPARED WITHOUT A TITLE REPORT AND DOES NOT NECESSARILY INDICATE ALL ENCUMBRANCES ON THE PROPERTY.
5. EXISTING TOPOGRAPHY SHOWN IS BASED ON A FIELD RUN SURVEY PERFORMED BY MORRIS & RITCHIE ASSOCIATES, INC. IN 2020 AND AERIAL TOPOGRAPHY BY THRASHER. HORIZONTAL DATUM IS BASED ON NAD 83 AND VERTICAL DATUM IS BASED ON NAD 88.
6. THE PROPERTIES SHOWN HEREON ARE LOCATED WITHIN FEMA FLOOD ZONE "X" PER FEMA FLOOD MAP 54037C0120E DATED 12/18/2009.

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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EXISTING CONDITIONS OVERVIEW

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1" = 250'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	5 OF 71

PLAN VIEW
(SEE SHEETS 8, 13, 59)

PLAN VIEW
(SEE SHEETS 10, 15, 61)

PLAN VIEW
(SEE SHEETS 11, 16, 62)

PLAN VIEW
(SEE SHEETS 7, 12, 58)

PLAN VIEW
(SEE SHEETS 9, 14, 60)

Nysong Street
Gerry Street
Freeman Street
Sumter Avenue
Barlett Avenue
Braxton Avenue
Sherman Avenue
Huntwellwest Boulevard
Monroe Avenue
Thornton Avenue
Alice Ct
Three Sisters Ct
Styles Ray
Roselle Dr
NY ROUTE 115

[PHASE 1]
[PHASE 2]
[PHASE 3]

N 15° 31' 03" E 915.63'
S 86° 53' 15" E 915.63'
S 89° 07' 09" W 329.83'
S 01° 01' 51" E 326.94'
S 60° 07' 44" E 473.37'
N 29° 26' 11" E 219.99'
S 30° 23' 24" W 207.77'
S 60° 07' 44" E 375.94'
N 29° 52' 16" E 422.41'
S 29° 52' 16" W 422.41'

NORTH
NAD83

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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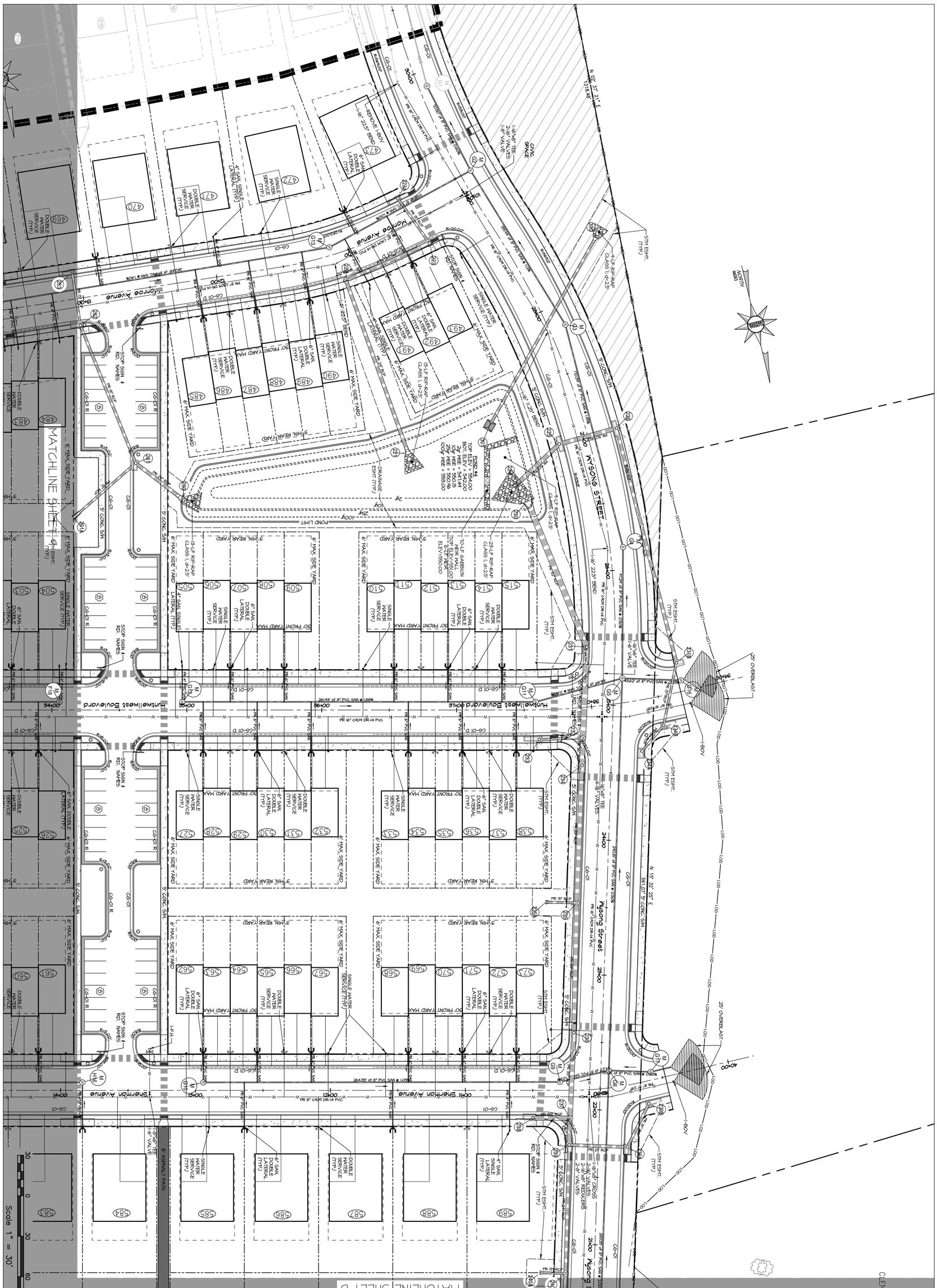
PROFESSIONAL ENGINEER
WEST VIRGINIA

OVERALL PLAN

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1" = 100'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	6 OF 71

100 0 100 200 300
Scale 1" = 100'



LAYOUT & UTILITY PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 7 OF 71

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DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

CLENDENIN, SCOTT E SR & SAMANTHA E
TAX MAP :02-7-8.21
DB. 1144 PG. 406

ANDERSON, BEJAMIN
TAX MAP :02-7-8.22
DB. 1176 PG. 386

JOHNSON, DENNIS K & DEBORAH
TAX MAP :02-7-8.15
DB. 972 PG. 559

GROUND OBSCURED

SEE BELOW MATCHLINE

WEST END GROUP OF INVESTORS LLC
TAX MAP :02-9-14
DB. 988 PG. 458

N 15° 31' 33" E
187.77'

1-16"x16" TEE
3-16" VALVES

APPROX. EXTENTS OF BORING PIT

1-16" 11.25° BEND

JACK & BORE
30LF - 30" DIA. CASING PIPE
5"SPACERS & END SEALS REQUIRED

APPROX. EXTENTS OF RECIEVING PIT

EX. OVERHEAD LINE

EX. 20' WAT ESMT

S 40° 09' 36" E
219.79'

N 15° 31' 03" E
964.59'

S 19° 02' 04" W
41.61'

186.25'
S 15° 41' 06" W

Nysong Street

1-16"x8" TEE
2-16" VALVES
1-8" VALVE

1-8"x6" TEE
1-6" VALVE

1-16"x6" TEE
2-16" VALVES
1-8" VALVE

1-16"x6" TEE
1-6" VALVE

1-16"x16" TEE
3-16" VALVES

1-F.H.

PR 16" CADI DR-14 PVC

PR 8" CADI DR-14 PVC

PR 6" CADI DR-14 PVC

PR 24" RCP

PR 21" RCP

PR 15" RCP

PR 8" PVC SAN

PR 6" PVC SAN

5' CONC. S/W

8' ASPHALT PATH

STM ESMT. (TYP.)

STOP SIGN & RD. NAMES

MAILBOX CLUSTER

SINGLE WATER SERVICE (TYP.)

4" SAN. SINGLE LATERAL (TYP.)

6" SAN. DOUBLE LATERAL (TYP.)

DOUBLE WATER SERVICE (TYP.)

1-6" 11.25° BEND

Summer Avenue

Spruce Avenue

Birch Avenue

Elm Avenue

8.00' (TYP)

22.00' (TYP)

CIVIC SPACE

MATCHLINE SHEET 7

MATCHLINE SHEET 10

SEE ABOVE MATCHLINE

ARROYAVE, RAFAEL D ET AL
TAX MAP :02-7-49
DB. 939 PG. 369

JENNY
108 PG. 292

Scale 1" = 30'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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PROFESSIONAL ENGINEER
7/28/25

LAYOUT & UTILITY PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	8 OF 71

MATCHLINE SHEET 7

MATCHLINE SHEET 10

PHASE 2

PHASE 3

Scale 1" = 30'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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PROFESSIONAL ENGINEER
7/28/25

LAYOUT & UTILITY PLAN

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	9 OF 71

MATCHLINE SHEET 9

MATCHLINE SHEET 8

MATCHLINE SHEET 11

CIVIC SPACE

Braxton Avenue

Bodart Avenue

Surface Avenue

Gerry Street

PROPOSED PLAYGROUND

STOP SIGN & RD. NAMES

STM ESMT. (TYP.)

4" SAN. LATERAL (TYP.)

6" SAN. DOUBLE LATERAL (TYP.)

SINGLE WATER SERVICE (TYP.)

DOUBLE WATER SERVICE (TYP.)

1-8"x8" TEE 1-8" VALVE

1-8"x8" TEE 3-8" VALVES

1-8" 11.25° BEND

1-16"x8" TEE 2-8" VALVES

1-16"x6" TEE 1-6" VALVE

F.H.

5' CONC. S/W

8' ASPHALT PATH

SHILEY, WILLIAM & PENNY TAX MAP :02-7-48 DB. 1108 PG. 292

HITT, WILLIAM E & NANCY LOU TAX MAP :02-7-47 DB. 254 PG. 227

HITT, WILLIAM E & NANCY LOU TAX MAP :02-7-46 DB. 251 PG. 527

ODEN, GINGER L TAX MAP :02-7-45 DB. 1201 PG. 427

COULTER, SHAWN G & KAREN S TAX MAP :02-7-44 DB. 988 PG. 361

ROBEY, BRIAN O TAX MAP :02-7-43 DB. 1167 PG. 5

S 60° 07' 48" E 873.37'

N 29° 26' 11" E 218.39'

S 29° 23' 24" W 217.37'

NORTH

PHASE 3

PHASE 2

30 0 30 60 90

Scale 1" = 30'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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LAYOUT & UTILITY PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	10 OF 71

LAYOUT & UTILITY PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 11 OF 71

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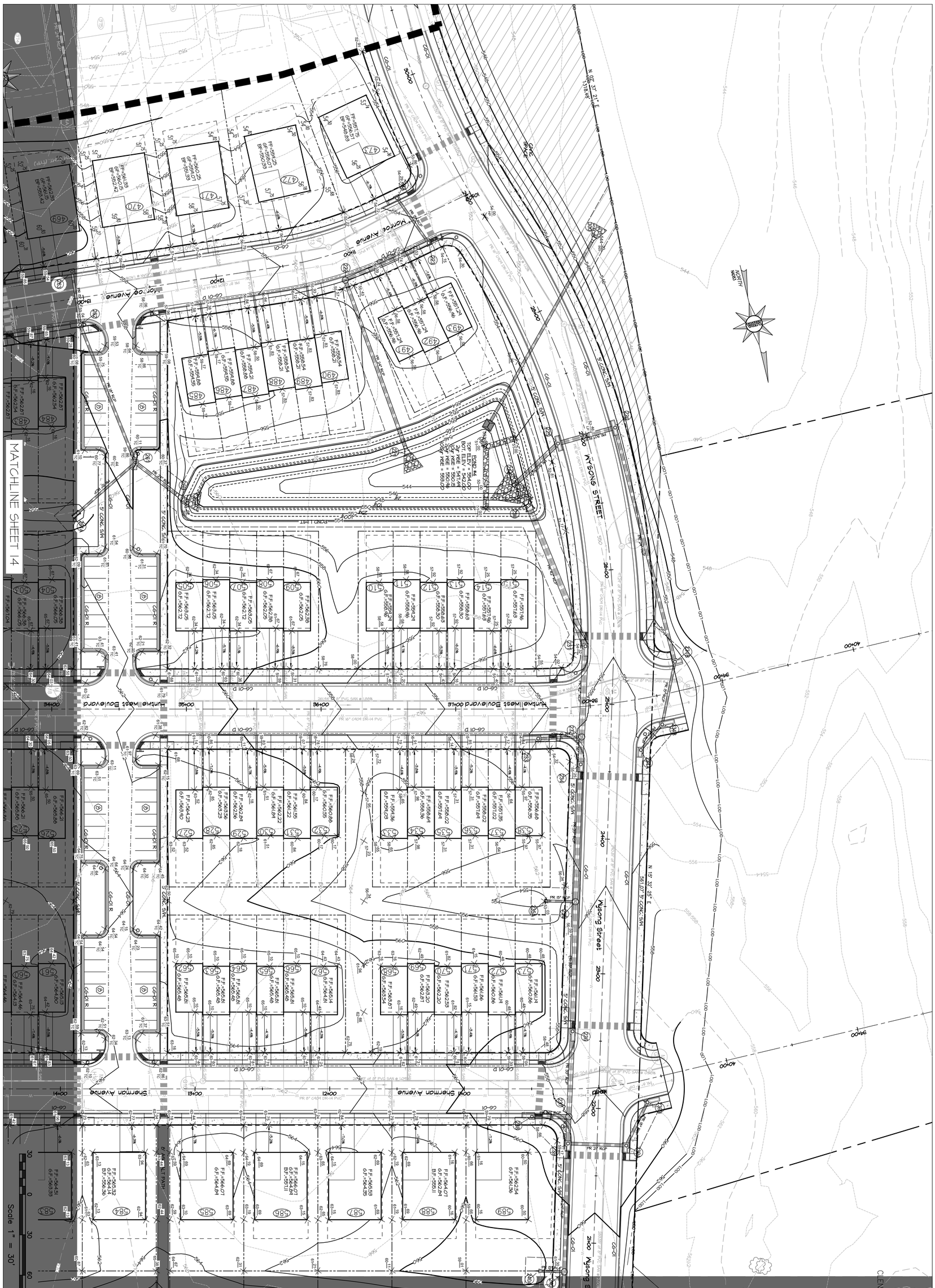
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS



GRADING PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

RICHARD A. DEAD — REGISTERED PROFESSIONAL ENGINEER — STATE OF WEST VIRGINIA — 20884

MORRIS & RITCHIE ASSOCIATES, INC.

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DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD

SHEET: 12 OF 71

CLENDENIN, SCOTT E SR & SAMANTHA E
TAX MAP :02-7-8.21
DB. 1144 PG. 406

ANDERSON, BEJAMIN
TAX MAP :02-7-8.22
DB. 1176 PG. 386

JOHNSON, DENNIS K & DEBORAH
TAX MAP :02-7-8.15
DB. 972 PG. 559

WEST END GROUP OF INVESTORS LLC
TAX MAP :02-9-7.4
DB. 988 PG. 458

ARROYAVE, RAFAEL D ET AL
TAX MAP :02-7-49
DB. 939 PG. 369

PENNY
DB. 108 PG. 292

SEE BELOW MATCHLINE

SEE ABOVE MATCHLINE

MATCHLINE SHEET 12

MATCHLINE SHEET 15

Wysong Street

Boston Avenue

Bristol Avenue

Summer Avenue

OLD LEE TOWN PIKE

5' ASPHALT PATH

8' ASPHALT PATH

5' CONC. S/W

MAILBOX CLUSTER

GROUND OBSCURED

Scale 1" = 30'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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PROFESSIONAL ENGINEER

GRADING PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	13 OF 71

MATCHLINE SHEET 12

MATCHLINE SHEET 15

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

GRADING PLAN

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	14 OF 71

Scale 1" = 30'

GRADING PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115

SCALE: AS SHOWN

DATE: 04/18/2025

DRAWN BY: KM/BZ

DESIGN BY: KM/BZ

REVIEW BY: RJD

SHEET: 15 OF 71

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ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

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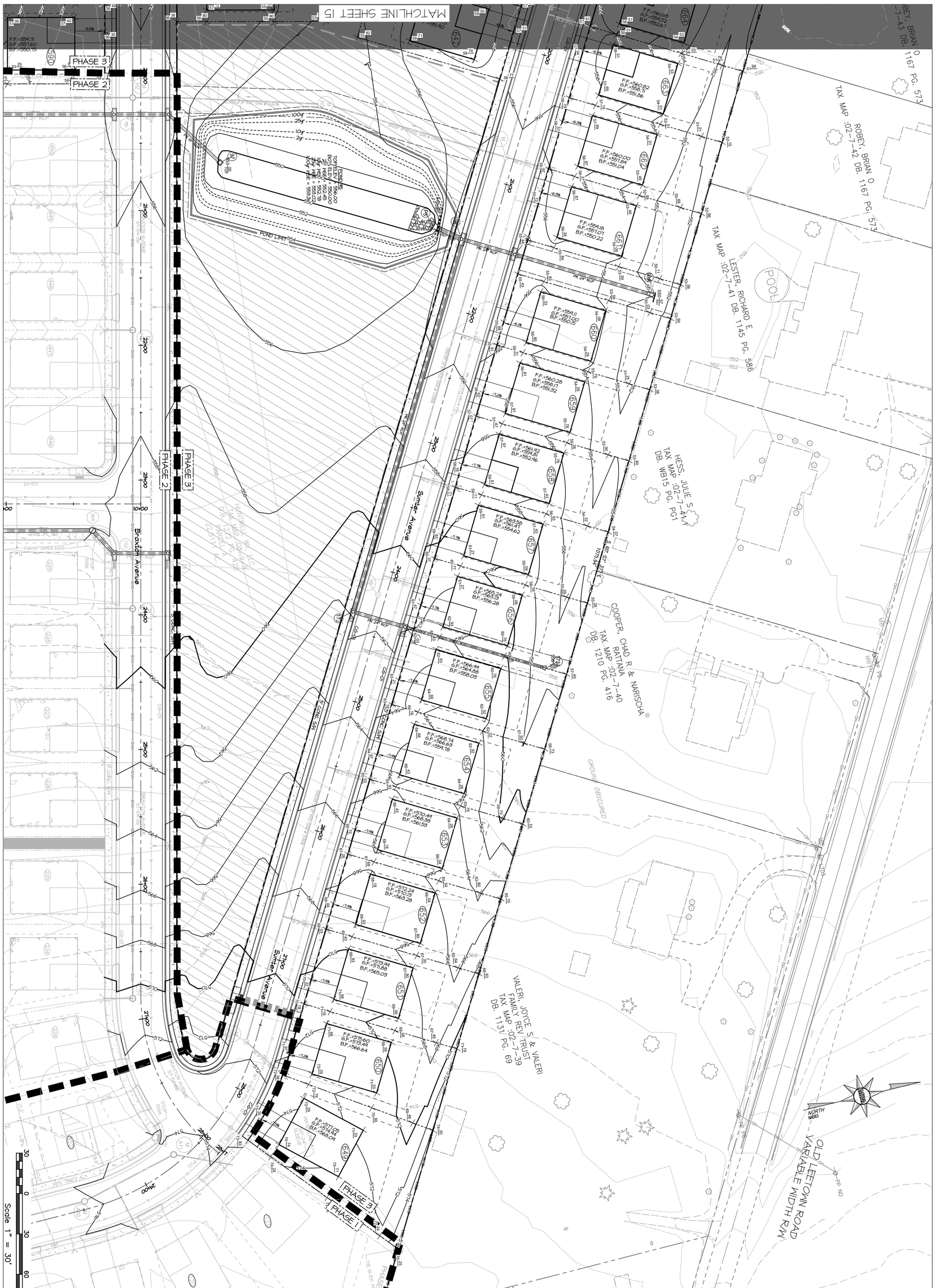
DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS



GRADING PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115

SCALE: AS SHOWN

DATE: 04/18/2025

DRAWN BY: KM/BZ

DESIGN BY: KM/BZ

REVIEW BY: RJD

SHEET: 16 OF 71

RICHARD J. DEAD — 20864 — STATE OF WEST VIRGINIA — PROFESSIONAL ENGINEER — REGISTERED

MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

205 E. HIRST ROAD, SUITE 106

PURCELLVILLE, VIRGINIA 20132

PHONE: (703) 994-4047

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DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

Scale 1" = 100'

JOB NO.: 21115	
SCALE: AS SHOWN	
DATE: 04/18/2025	
DRAWN BY: KM/BZ	
DESIGN BY: KM/BZ	
REVIEW BY: RJD	
SHEET: 17 OF 71	

ADA RAMP OVERALL SCHEMATIC

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

RICHARD J. DEAD — 20864 — REGISTERED PROFESSIONAL ENGINEER — STATE OF WEST VIRGINIA

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DATE	REVISIONS
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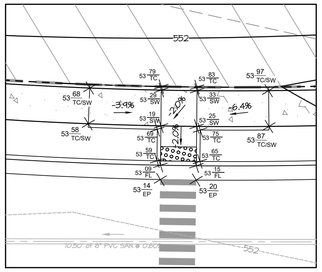
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS



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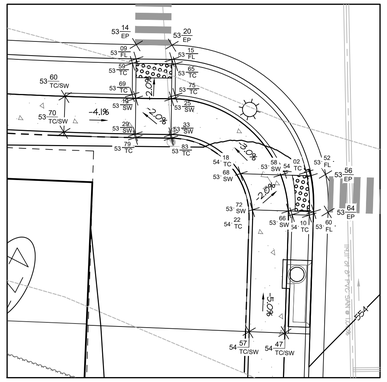

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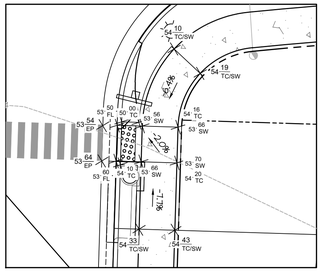

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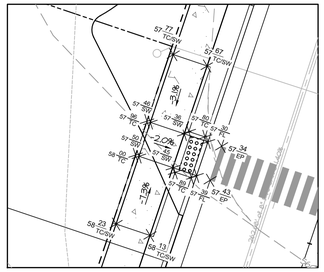

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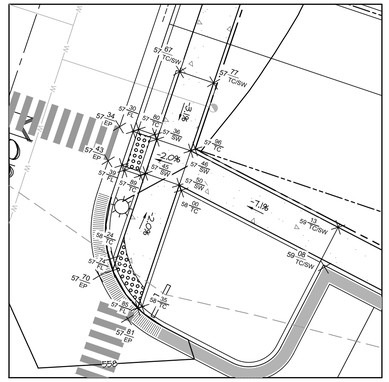

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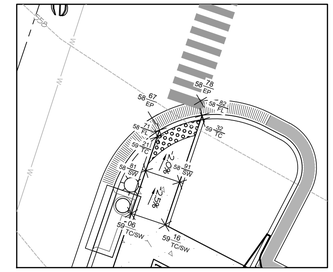

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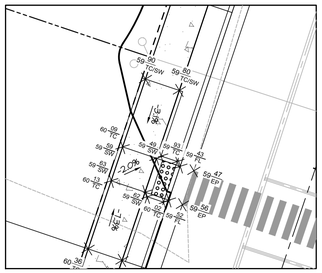

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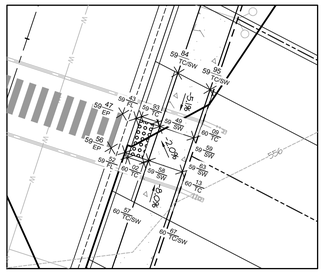

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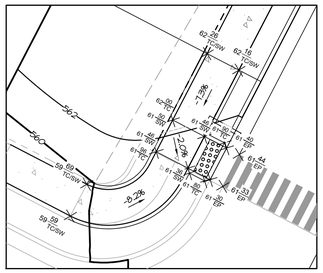

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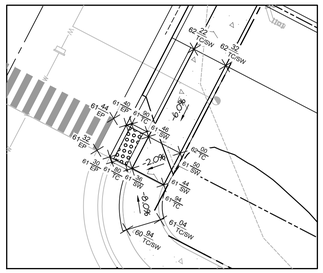

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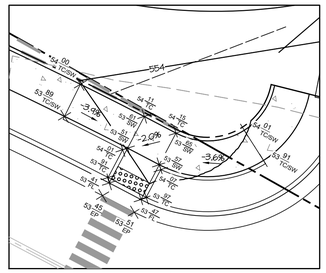

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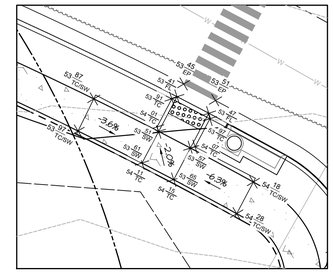
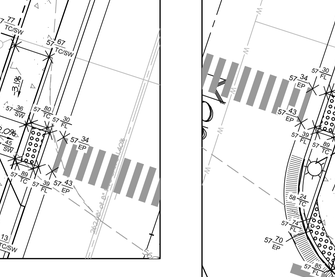


RAMP #14

RAMP #15

RAMP #16

RAMPS #17 & #18



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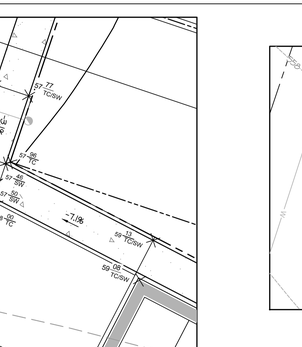

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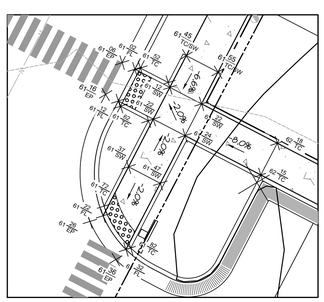

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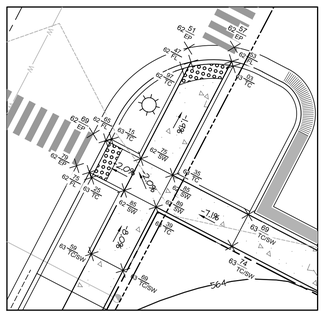

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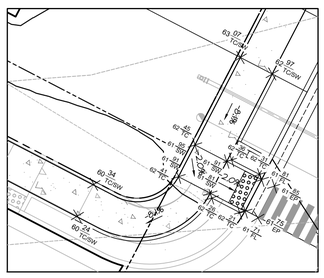

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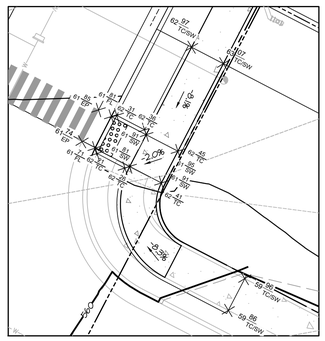

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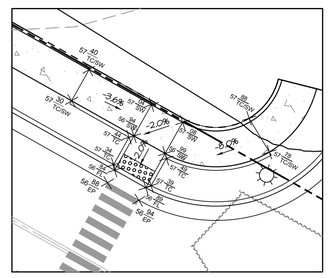

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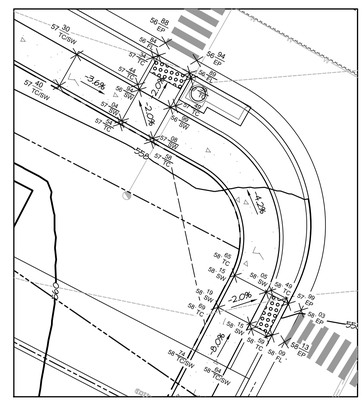

RAMPS #30 & #31

10 0 10 20 30

Scale 1" = 10'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.

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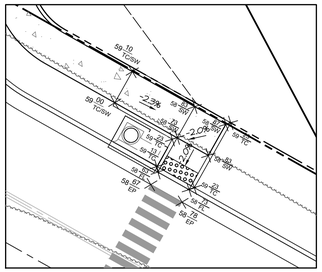
RICHARD J. DYER
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

ADA RAMP DETAIL GRADING

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	18 OF 71



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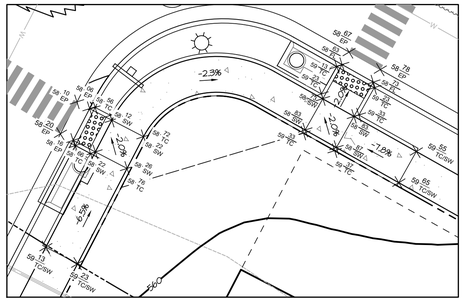
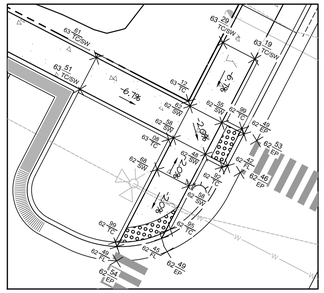
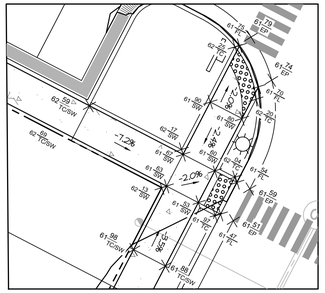


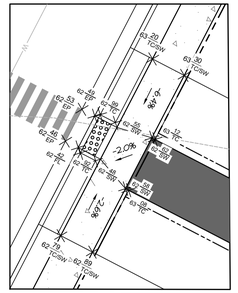
RAMPS #33 & #34



RAMPS #35 & #36



RAMPS #37 & #38



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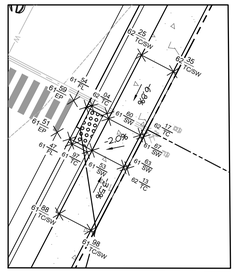

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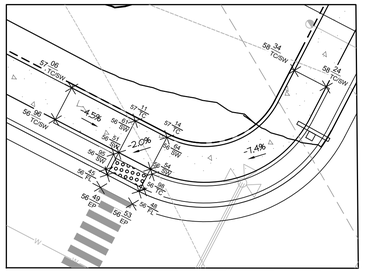

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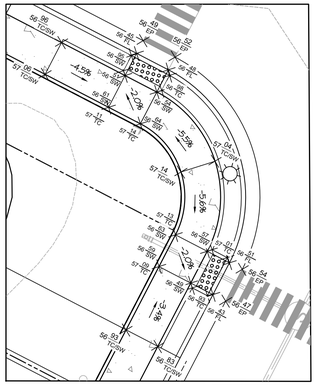

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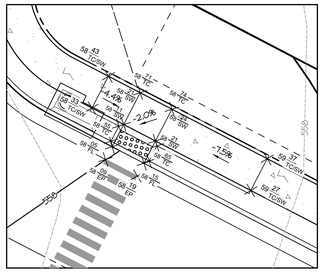

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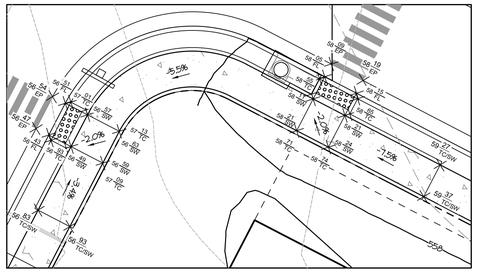

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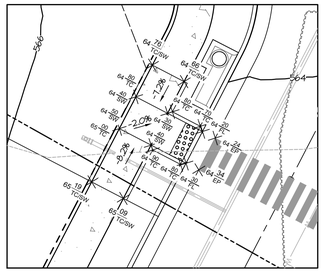

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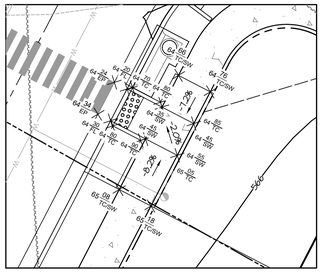

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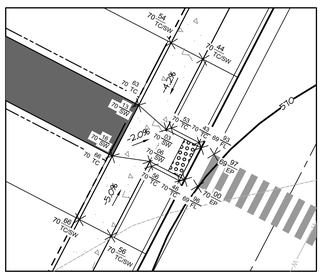

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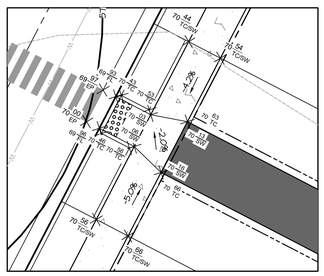

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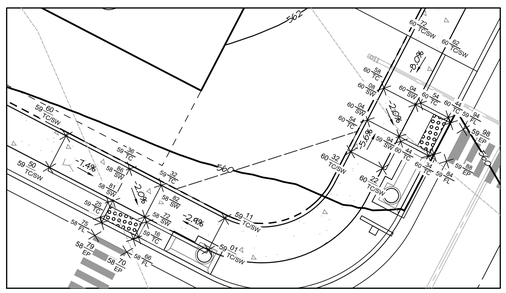

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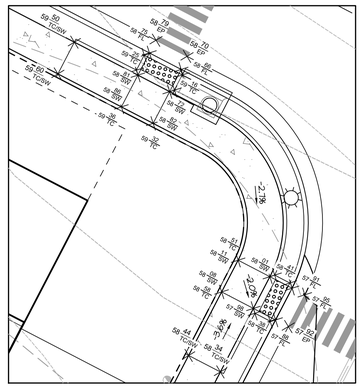

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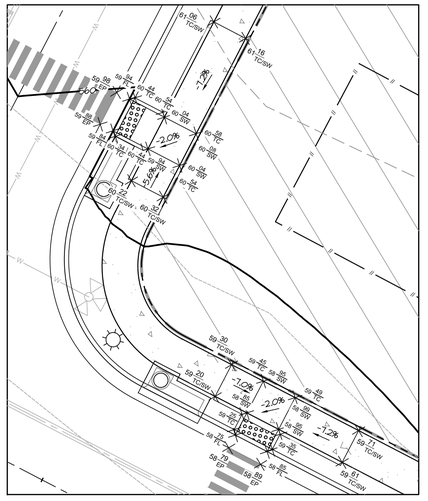

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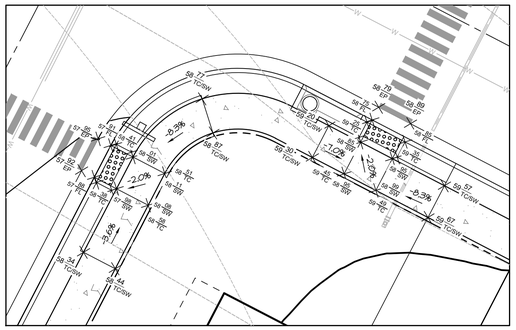

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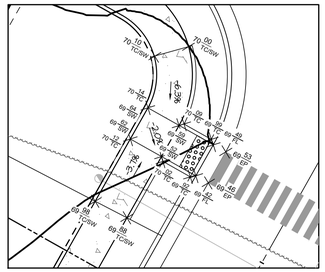

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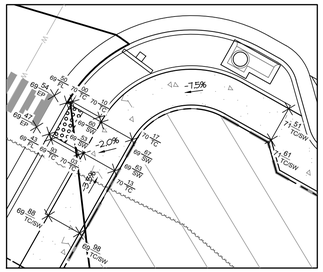

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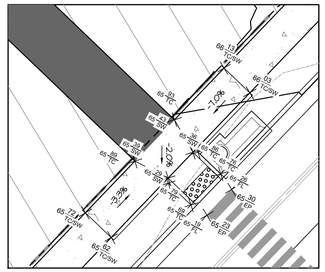

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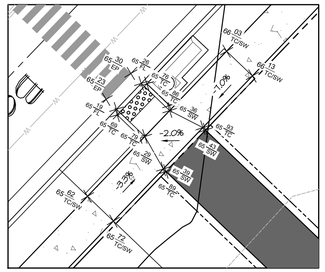

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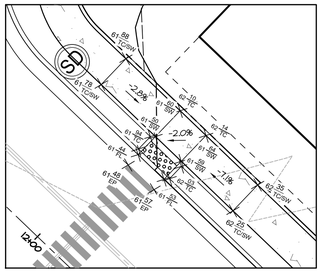

RAMP #63

10 0 10 20 30

Scale 1" = 10'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
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RICHARD J. DYER REGISTERED 20884 STATE OF VIRGINIA PROFESSIONAL ENGINEER 7/28/25

ADA RAMP DETAIL GRADING

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	19 OF 71

RAMP #64

RAMPS #65 & #66

RAMP #67

RAMPS #68 & 69

RAMP #70

RAMPS #71 & #72

10 0 10 20 30

Scale 1" = 10'

DATE	REVISIONS
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7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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STATE OF
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PROFESSIONAL ENGINEER
7/28/25

ADA RAMP DETAIL GRADING

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 20 OF 71

SANITARY LATERAL TABLE

LOT NUMBER	DIST. FROM LOWER MH	UPPER MANHOLE	LOWER MANHOLE	SLOPE FT./FT.	LAT LEN FROM MAIN TO C/O	LAT LEN FROM C/O TO END OF HOUSE	TOTAL LATERAL LEN FT.	INV. @ MAIN	INV @ CONN.	START RISER STATION	RISER HEIGHT FT.	RISER LENGTH	BEGIN RISER INV	END RISER INV	INV @ HOUSE	FF/BF ELEV. FT.	COMMENTS
465	155.56	G15	G14	2%	17.35	85.55	102.90	549.60	550.27	0 + 17.35	0.00	0.00	550.62	550.62	552.33	556.17	
466	155.56	G15	G14	2%	17.35	88.09	105.44	549.60	550.27	0 + 17.35	0.00	0.00	550.62	550.62	552.38	556.17	
467	22.85	G15	G14	2%	18.96	89.90	108.86	548.16	548.83	0 + 18.96	1.00	1.41	549.21	550.21	551.98	555.75	
468	22.85	G15	G14	2%	18.96	86.08	105.04	548.16	548.83	0 + 18.96	0.00	0.00	549.21	549.21	550.93	554.42	
469	172.09	G14	G13	2%	19.99	86.29	106.28	546.54	547.21	0 + 19.99	6.00	8.49	547.61	553.61	555.17	558.42	
470	172.09	G14	G13	2%	19.99	86.38	106.37	546.54	547.21	0 + 19.99	0.00	0.00	547.61	547.61	549.34	552.42	
471	83.66	G14	G13	2%	19.01	75.89	94.90	545.30	545.97	0 + 19.01	0.00	0.00	546.35	546.35	547.87	551.33	
472	97.26	G13	G2	2%	17.55	92.51	110.06	543.81	544.48	0 + 17.55	0.00	0.00	544.83	544.83	546.68	550.33	
473	97.26	G13	G2	2%	17.55	88.55	106.10	543.81	544.48	0 + 17.55	0.00	0.00	544.83	544.83	546.60	548.83	
474	0.00	G15		2%	35.99	68.96	104.95	549.74	550.41	0 + 35.99	8.00	11.31	551.13	559.13	560.28	564.00	
475	0.00	G15		2%	35.99	67.05	103.04	549.74	550.41	0 + 35.99	8.00	11.31	551.13	559.13	560.24	564.00	
476	131.63	G15	G14	2%	37.93	69.06	106.99	549.34	550.01	0 + 37.93	9.00	12.73	550.77	559.77	560.90	564.00	
477	131.63	G15	G14	2%	37.93	67.15	105.08	549.34	550.01	0 + 37.93	9.00	12.73	550.77	559.77	560.86	564.00	
478	96.02	G15	G14	2%	38.16	65.60	103.76	548.95	549.62	0 + 38.16	9.00	12.73	550.38	559.38	560.44	564.00	
479	54.09	G15	G14	2%	37.08	62.05	99.13	548.50	549.17	0 + 37.08	9.00	12.73	549.91	558.91	559.90	563.50	
480	26.84	G15	G14	2%	35.47	62.18	97.65	548.20	548.87	0 + 35.47	9.00	12.73	549.58	558.58	559.57	563.50	
481	13.38	G15	G14	2%	34.40	62.69	97.09	548.06	548.73	0 + 34.40	10.00	14.14	549.42	559.42	560.39	563.50	
482	249.42	G14	G13	2%	33.15	65.15	98.30	547.62	548.29	0 + 33.15	9.00	12.73	548.95	557.95	559.00	562.83	
483	239.42	G14	G13	2%	33.26	64.70	97.96	547.48	548.15	0 + 33.26	10.00	14.14	548.82	558.82	559.83	562.83	
484	208.48	G14	G13	2%	33.61	67.48	101.09	547.05	547.72	0 + 33.61	10.00	14.14	548.39	558.39	559.46	562.83	
485	100.85	G14	G13	2%	34.80	68.01	102.81	545.54	546.21	0 + 34.80	8.00	11.31	546.91	554.91	556.04	559.84	
486	100.85	G14	G13	2%	34.80	66.09	100.89	545.54	546.21	0 + 34.80	8.00	11.31	546.91	554.91	556.00	559.84	
487	60.85	G14	G13	2%	35.25	68.01	103.26	544.98	545.65	0 + 35.25	7.00	9.90	546.36	553.36	554.52	558.17	
488	60.85	G14	G13	2%	35.25	66.10	101.35	544.98	545.65	0 + 35.25	8.00	11.31	546.36	554.36	555.45	558.50	
489	20.85	G14	G13	2%	35.03	68.65	103.68	544.42	545.09	0 + 35.03	8.00	11.31	545.79	553.79	554.94	558.50	
490	20.85	G14	G13	2%	35.03	66.74	101.77	544.42	545.09	0 + 35.03	8.00	11.31	545.79	553.79	554.90	558.50	
491	106.17	G13	G2	2%	35.73	66.25	101.98	543.90	544.57	0 + 35.73	7.00	9.90	545.28	552.28	553.41	557.25	
492	70.72	G13	G2	2%	38.87	68.01	106.88	543.55	544.22	0 + 38.87	8.00	11.31	545.00	553.00	554.13	557.25	
493	70.72	G13	G2	2%	38.87	66.10	104.97	543.55	544.22	0 + 38.87	8.00	11.31	545.00	553.00	554.09	557.25	
494	3.66	F18	F17	2%	24.00	67.81	91.81	554.31	554.98	0 + 24.00	5.00	7.07	555.46	560.46	561.67	565.00	
495	39.25	F18	F17	2%	24.00	67.05	91.05	554.52	555.19	0 + 24.00	5.00	7.07	555.67	560.67	561.87	565.67	
496	39.25	F18	F17	2%	24.00	68.96	92.96	554.52	555.19	0 + 24.00	6.00	8.49	555.67	561.67	562.88	566.34	
497	79.25	F18	F17	2%	24.00	67.05	91.05	554.76	555.43	0 + 24.00	6.00	8.49	555.91	561.91	563.08	567.00	
498	79.25	F18	F17	2%	24.00	68.96	92.96	554.76	555.43	0 + 24.00	6.00	8.49	555.91	561.91	563.12	567.00	
499	135.66	F18	F17	2%	24.00	65.87	89.87	555.10	555.77	0 + 24.00	6.00	8.49	556.25	562.25	563.40	567.00	
500	171.25	F18	F17	2%	24.00	68.96	92.96	555.32	555.99	0 + 24.00	6.00	8.49	556.47	562.47	563.68	567.00	
501	171.25	F18	F17	2%	24.00	67.05	91.05	555.32	555.99	0 + 24.00	6.00	8.49	556.47	562.47	563.64	567.00	
502	211.25	F18	F17	2%	24.00	68.96	92.96	555.56	556.23	0 + 24.00	6.00	8.49	556.71	562.71	563.92	567.00	
503	211.25	F18	F17	2%	24.00	67.05	91.05	555.56	556.23	0 + 24.00	5.00	7.07	556.71	561.71	562.91	566.34	
504	246.83	F18	F17	2%	24.00	67.81	91.81	555.77	556.44	0 + 24.00	5.00	7.07	556.92	561.92	563.13	566.34	
505	246.83	F18	F17	2%	24.00	65.87	89.87	551.12	551.79	0 + 24.00	6.00	8.49	552.27	558.27	559.42	563.01	
506	226.35	G12	G11	2%	24.00	68.96	92.96	550.45	551.12	0 + 24.00	7.00	9.90	551.60	558.60	559.78	563.01	
507	226.35	G12	G11	2%	24.00	67.05	91.05	550.45	551.12	0 + 24.00	7.00	9.90	551.60	558.60	559.74	563.01	
508	186.35	G12	G11	2%	24.00	68.96	92.96	549.70	550.37	0 + 24.00	7.00	9.90	550.85	557.85	559.03	562.34	
509	186.35	G12	G11	2%	24.00	67.05	91.05	549.70	550.37	0 + 24.00	7.00	9.90	550.85	557.85	558.99	562.34	
510	105.00	G12	G11	2%	24.00	67.05	91.05	548.17	548.84	0 + 24.00	5.00	7.07	549.32	554.32	555.52	559.25	
511	105.00	G12	G11	2%	24.00	68.96	92.96	548.17	548.84	0 + 24.00	5.00	7.07	549.32	554.32	555.56	559.25	
512	65.00	G12	G11	2%	24.00	67.05	91.05	547.41	548.08	0 + 24.00	5.00	7.07	548.56	553.56	554.76	558.59	
513	65.00	G12	G11	2%	24.00	68.96	92.96	547.41	548.08	0 + 24.00	5.00	7.07	548.56	553.56	554.80	558.59	
514	25.00	G12	G11	2%	24.00	67.05	91.05	546.66	547.33	0 + 24.00	5.00	7.07	547.81	552.81	554.01	557.92	
515	25.00	G12	G11	2%	24.00	68.96	92.96	546.66	547.33	0 + 24.00	5.00	7.07	547.81	552.81	554.05	557.92	
516	19.24	F18	F17	2%	36.00	67.05	103.05	554.40	555.07	0 + 36.00	5.00	7.07	555.79	560.79	561.99	565.31	
517	19.24	F18	F17	2%	36.00	68.96	104.96	554.40	555.07	0 + 36.00	5.00	7.07	555.79	560.79	562.03	565.98	
518	59.24	F18	F17	2%	36.00	67.05	103.05	554.64	555.31	0 + 36.00	6.00	8.49	556.03	562.03	563.20	566.65	
519	59.24	F18	F17	2%	36.00	68.96	104.96	554.64	555.31	0 + 36.00	6.00	8.49	556.03	562.03	563.24	566.65	
520	103.66	F18	F17	2%	36.00	64.15	100.15	554.91	555.58	0 + 36.00	6.00	8.49	556.30	562.30	563.41	567.32	
521	151.24	F18	F17	2%	36.00	67.05	103.05	555.20	555.87	0 + 36.00	6.00	8.49	556.59	562.59	563.76	567.51	
522	151.24	F18	F17	2%	36.00	68.96	104.96	555.20	555.87	0 + 36.00	6.00	8.49	556.59	562.59	563.80	567.51	
523	191.24	F18	F17	2%	36.00	67.05	103.05	555.44	556.11	0 + 36.00	5.00	7.07	556.83	561.83	563.03	566.84	
524	191.24	F18	F17	2%	36.00	68.96	104.96	555.44	556.11	0 + 36.00	5.00	7.07	556.83	561.83	563.07	566.84	
525	231.24	F18	F17	2%	36.00	67.05	103.05	555.68	556.35	0 + 36.00	4.00	5.66	557.07	561.07	562.30	566.17	
526	231.24	F18	F17	2%	36.00	68.96	104.96	555.68	556.35	0 + 36.00	4.00	5.66	557.07	561.07	562.34	566.17	
527	246.36	G12	G11	2%	36.00	68.96	104.96	550.82	551.49	0 + 36.00	7.00	9.90	552.21	559.21	560.39	564.19	
528	246.36	G12	G11	2%	36.00	67.05	103.05	550.82	551.49	0 + 36.00	7.00	9.90	552.21	559.21	560.35	563.52	
529	206.36	G12	G11	2%	36.00	68.96	104.96	550.07	550.74	0 + 36.00	7.00	9.90	551.46	558.46	559.64	562.85	
530	206.36	G12	G11	2%	36.00	67.05	103.05	550.07	550.74	0 + 36.00	6.00	8.49	551.46	557.46	558.63	562.18	
531	166.36	G12	G11	2%	36.00	68.96	104.96	549.32	549.99	0 + 36.00	6.00	8.49	550.71	556.71	557.92	561.51	
532	166.36	G12	G11	2%	36.00	67.05	103.05	549.32	549.99	0 + 36.00	5.00	7.07	550.71	555.71	556.91	560.84	
533	94.36	G12	G11	2%	36.00	68.96	104.96	547.96	548.63	0 + 36.00	5.00	7.07	549.35	554.35	555.59	559.32	
534	94.36	G12	G11	2%	36.00	67.05	103.05	547.96	548.63	0 + 36.00	5.00	7.07	549.35	554.35	555.55	558.65	
535	54.36	G12	G11	2%	36.00	68.96	104.96	547.21	547.88	0 + 36.00	5.00	7.07	548.60	553.60	554.84	557.98	
536	54.36	G12	G11	2%	36.00	67.05	103.05	547.21	547.88	0 + 36.00	5.00	7.07	548.60	553.60	554.80	557.98	
537	14.36	G12	G11	2%	36.00	68.96	104.96	546.46	547.13	0 + 36.00	5.00	7.07	547.85	552.85	554.09	557.31	
538	14.36	G12	G11	2%	36.00	67.05	103.05	546.46	547.13	0 + 36.00	4.00	5.66	547.85	551.85	553.08	556.64	
539	49.75	H15	H1	2%	21.06	68.96	90.02	543.52	544.19	0 + 21.06	6.00	8.49	544.61	550.61	551.82	555.58	
540	49.75	H15	H1	2%	21.06	67.05	88.11	543.52	544.19	0 + 21.06	6.00	8.49	544.61	550.61	551.78	555.58	
541	89.75	H15	H1	2%	21.06	68.96	90.02	543.92	544.59	0 + 21.06	7.00	9.90	545.01	552.01	553.19	556.25	
542	89.75	H15	H1	2%	21.06	67.05	88.11	543.92	544.59	0 + 21.06	7.00	9.90	545.01	552.01	553.15	556.25	
543	129.75	H15	H1	2%	21.06	68.96	90.02	544.32	544.99	0 + 21.06	7.00	9.90	545.41	552.41	553.59	556.92	
544	129.75	H15	H1	2%	21.06	67.05	88.11	544.32	544.99	0 + 21.06	7.00	9.90	545.41	552.41	553.55	556.92	
545	167.69	H15	H1	2%	21.07	69.74	90.81	544.68	545.35	0 + 21.07	7.00	9.90	545.77	552.77	553.97	557.83	
546	211.19	H15	H1	2%	21.07	68.96	90.03	545.13	545.80	0 + 21.07	7.00	9.90	546.22	553.22	554.40	557.83	
547	211.19	H15	H1	2%	21.07	67.05	88.12	545.13	545.80	0 + 21.07	7.00	9.90	546.22	553.22	554.36	557.83	
548	251.19	H15	H1	2%	21.07	68.96	90.03	545.53	546.20	0 + 21.07	7.00	9.90	546.62	553.62	554.80	558.50	
549	251.19	H15	H1	2%	21.07	67.05	88.12	545.53	546.20	0 + 21.07	7.00	9.90	546.62	553.62	554.76	558.50	
550	0.00	H15		2%	21.08	70.04	91.12	545.96	546.63	0 + 21.08	7.00	9.90	547.05	554.05	555.25	559.17	
551	102.48	H16	H15	2%	21.09	66.87	87.96	547.03	547.70	0 + 21.09	9.00	12.73	548.12	557.12	558.20	561.58	
552	102.48	H16	H15	2%	21.09	68.96	90.05	547.03	547.70	0 + 21.09	9.00	12.73	548.12	557.12	558.25	561.58	
553	142.48	H16	H15	2%	21.09	66.87	87.96	547.41	548.08	0 + 21.09	9.00	12.73	548.50	557.50	558.58	561.58	
554	142.48	H16	H15	2%	21.09	68.96	90.05	547.41	548.08	0 + 21.09	9.00	12.73	548.50	557.50	558.63	562.25	
555	198.48	H16	H15	2%	21.10	73.43	94.53	547.93	548.60	0 + 21.10	9.00	12.73	549.02	558.02	559.24	562.92	
556	234.48	H16	H15	2%	21.10	67.05	88.15	548.27	548.94	0 + 21.10	9.00	12.73	549.36	558.36	559.45	563.08	
557	234.48	H16	H15	2%	21.10	68.96	90.06	548.27	548.94	0 + 21.10	10.00	14.14	549.36	559.36	560.46	563.75	
558	274.48	H16	H15	2%	21.10	67.05	88.15	548.65	549.32	0 + 21.10	9.00	12.73	549.74	558.74	559.83	563.75	
559	274.48	H16	H15	2%	21.10	68.96	90.06	548.65	549.32	0 + 21.10	10.00	14.14	549.74	559.74	560.84	564.42	
560	314.48	H16	H15	2%	21.11	67.05	88.16	549.03	549.70	0 + 21.11	10.00	14.14	550.12	560.12	561.18	564.42	
561	314.48	H16	H15	2%	21.11	68.96	90.07	549.03	549.70	0 + 21.11	10.00	14.14	550.12	560.12	561.22	565.09	
562	0.00	G10		2%	21.15	68.96	90.11	550.47	551.14	0 + 21.15	10.00	14.14	551.56	561.56	562.66	565.77	
563	0.00	G10		2%	21.15	67.05	88.20	550.47	551.14	0 + 21.15	10.00	14.14	551.56	561.56	562.62	565.77	
564	224.31	G10	G9	2%	21.10	68.96	90.06	550.04	550.71	0 + 21.10	10.00	14.14	551.13	561.13	562.23	565.77	
565	224.31	G10	G9	2%	21.10	67.05	88.15	550.04	550.71	0 + 21.10	10.00	14.14	551.13	561.13	562.19	565.77	
566	184.31	G10	G9	2%	21.06	68.96	90.02	549.60	550.27	0 + 21.06	10.00	14.14	550.69	560.69	561.79	565.77	
567	184.31	G10	G9	2%	21.06	67.05	88.11	549.60	550.27	0 + 21.06	10.00	14.14	550.69	560.69	561.75	565.10	

SANITARY LATERAL TABLE

LOT NUMBER	DIST. FROM LOWER MH	UPPER MANHOLE	LOWER MANHOLE	SLOPE FT./FT.	LAT LEN FROM MAIN TO C/O	LAT LEN FROM C/O TO END OF HOUSE	TOTAL LATERAL LEN FT.	INV. @ MAIN	INV @ CONN.	START RISER STATION	RISER HEIGHT FT.	RISER LENGTH	BEGIN RISER INV	END RISER INV	INV @ HOUSE	FF/BF ELEV. FT.	COMMENTS
568	112.31	G10	G9	2%	20.97	67.05	88.02	548.82	549.49	0 + 20.97	9.00	12.73	549.91	558.91	560.00	563.83	
569	112.31	G10	G9	2%	20.97	68.96	89.93	548.82	549.49	0 + 20.97	9.00	12.73	549.91	558.91	560.03	563.16	
570	72.31	G10	G9	2%	20.92	67.05	87.97	548.38	549.05	0 + 20.92	8.00	11.31	549.47	557.47	558.58	562.49	
571	72.31	G10	G9	2%	20.92	68.96	89.88	548.38	549.05	0 + 20.92	8.00	11.31	549.47	557.47	558.62	561.82	
572	32.31	G10	G9	2%	20.88	67.05	87.93	547.94	548.61	0 + 20.88	8.00	11.31	549.03	557.03	558.14	561.15	
573	32.31	G10	G9	2%	20.88	68.96	89.84	547.94	548.61	0 + 20.88	7.00	9.90	549.03	556.03	557.21	561.15	
574	69.75	H15	H1	2%	32.94	87.24	120.18	543.72	544.39	0 + 32.94	0.00	0.00	545.05	545.05	546.79	548.08	
575	69.75	H15	H1	2%	32.94	87.23	120.17	543.72	544.39	0 + 32.94	0.00	0.00	545.05	545.05	546.79	548.92	
576	188.75	H15	H1	2%	32.93	87.24	120.17	544.91	545.58	0 + 32.93	0.00	0.00	546.24	546.24	547.98	549.83	
577	188.75	H15	H1	2%	32.93	87.23	120.16	544.91	545.58	0 + 32.93	0.00	0.00	546.24	546.24	547.98	550.67	
578	279.45	H15	H1	2%	32.92	75.90	108.82	545.81	546.48	0 + 32.92	0.00	0.00	547.14	547.14	548.66	552.25	
579	127.12	H16	H15	2%	32.91	83.95	116.86	547.26	547.93	0 + 32.91	0.00	0.00	548.59	548.59	550.27	552.32	
580	127.12	H16	H15	2%	32.91	84.39	117.30	547.26	547.93	0 + 32.91	0.00	0.00	548.59	548.59	550.28	553.13	
581	203.48	H16	H15	2%	32.90	74.63	107.53	547.98	548.65	0 + 32.90	0.00	0.00	549.31	549.31	550.80	553.94	
582	260.28	H16	H15	2%	32.90	74.04	106.94	548.52	549.19	0 + 32.90	0.00	0.00	549.85	549.85	551.33	554.74	
583	0.00	H16		2%	32.89	84.37	117.26	549.34	550.01	0 + 32.89	0.00	0.00	550.67	550.67	552.36	555.55	
584	0.00	H16		2%	32.89	84.41	117.30	549.34	550.01	0 + 32.89	1.00	1.41	550.67	551.67	553.33	556.36	
585	233.93	G10	G9	2%	32.88	84.36	117.24	550.14	550.81	0 + 32.88	0.00	0.00	551.47	551.47	553.15	557.11	
586	233.93	G10	G9	2%	32.88	84.43	117.31	550.14	550.81	0 + 32.88	0.00	0.00	551.47	551.47	553.16	557.11	
587	123.93	G10	G9	2%	33.02	84.35	117.37	548.94	549.61	0 + 33.02	1.00	1.41	550.27	551.27	552.93	556.57	
588	123.93	G10	G9	2%	33.02	84.42	117.44	548.94	549.61	0 + 33.02	0.00	0.00	550.27	550.27	551.96	555.11	
589	37.31	G10	G9	2%	33.12	74.25	107.37	548.00	548.67	0 + 33.12	0.00	0.00	549.33	549.33	550.82	553.58	
590	69.75	H17	H2	2%	20.98	87.23	108.21	545.67	546.34	0 + 20.98	0.00	0.00	546.76	546.76	548.50	550.75	
591	69.75	H17	H2	2%	20.98	87.23	108.21	545.67	546.34	0 + 20.98	0.00	0.00	546.76	546.76	548.50	551.25	
592	154.66	H17	H2	2%	20.98	75.84	96.82	546.45	547.12	0 + 20.98	0.00	0.00	547.54	547.54	549.06	551.83	
593	248.25	H17	H2	2%	20.98	87.23	108.21	547.31	547.98	0 + 20.98	0.00	0.00	548.40	548.40	550.14	552.33	
594	248.25	H17	H2	2%	20.98	87.23	108.21	547.31	547.98	0 + 20.98	0.00	0.00	548.40	548.40	550.14	553.08	
595	48.68	H18	H17	2%	18.98	75.84	94.82	549.56	550.23	0 + 18.98	0.00	0.00	550.61	550.61	552.13	555.25	
596	134.71	H18	H17	2%	18.99	85.99	104.98	551.84	552.51	0 + 18.99	0.00	0.00	552.89	552.89	554.61	557.37	
597	134.71	H18	H17	2%	18.99	85.99	104.98	551.84	552.51	0 + 18.99	1.00	1.41	552.89	553.89	555.58	559.49	
598	212.88	H18	H17	2%	18.99	75.84	94.83	553.91	554.58	0 + 18.99	2.00	2.83	554.96	556.96	558.42	561.61	
599	0.00	H18		2%	19.00	85.99	104.99	556.21	556.88	0 + 19.00	1.00	1.41	557.26	558.26	559.95	563.47	
600	0.00	H18		2%	19.00	85.99	104.99	556.21	556.88	0 + 19.00	2.00	2.83	557.26	559.26	560.92	564.10	
601	0.00	G8		2%	19.00	85.99	104.99	556.27	556.94	0 + 19.00	2.00	2.83	557.32	559.32	560.98	564.07	
602	0.00	G8		2%	19.00	85.99	104.99	556.27	556.94	0 + 19.00	1.00	1.41	557.32	558.32	560.01	563.20	
603	150.58	G8	G7	2%	19.00	85.99	104.99	554.84	555.51	0 + 19.00	1.00	1.41	555.89	556.89	558.58	562.04	
604	150.58	G8	G7	2%	19.00	85.99	104.99	554.84	555.51	0 + 19.00	0.00	0.00	555.89	555.89	557.61	560.76	
605	64.55	G8	G7	2%	19.00	75.84	94.84	553.72	554.39	0 + 19.00	0.00	0.00	554.77	554.77	556.29	558.93	
606	189.96	H18	H17	2%	31.01	85.99	117.00	553.31	553.98	0 + 31.01	1.00	1.41	554.60	555.60	557.29	560.43	
607	189.96	H18	H17	2%	31.01	85.99	117.00	553.31	553.98	0 + 31.01	3.00	4.24	554.60	557.60	559.24	562.65	
608	0.00	H18		2%	31.00	85.99	116.99	556.21	556.88	0 + 31.00	2.00	2.83	557.50	559.50	561.16	564.39	
609	0.00	H18		2%	31.00	85.99	116.99	556.21	556.88	0 + 31.00	2.00	2.83	557.50	559.50	561.16	564.93	
610	0.00	G8		2%	31.00	85.99	116.99	556.27	556.94	0 + 31.00	2.00	2.83	557.56	559.56	561.22	564.93	
611	0.00	G8		2%	31.00	85.99	116.99	556.27	556.94	0 + 31.00	1.00	1.41	557.56	558.56	560.25	563.93	
612	173.33	G8	G7	2%	31.00	75.89	106.89	555.14	555.81	0 + 31.00	1.00	1.41	556.43	557.43	558.92	562.65	
613	95.33	G8	G7	2%	31.00	85.99	116.99	554.12	554.79	0 + 31.00	1.00	1.41	555.41	556.41	558.10	561.37	
614	95.33	G8	G7	2%	31.00	85.99	116.99	554.12	554.79	0 + 31.00	0.00	0.00	555.41	555.41	557.13	560.25	
615	0.00	H23		2%	19.00	89.28	108.28	555.74	556.41	0 + 19.00	2.00	2.83	556.79	558.79	560.52	563.97	
616	0.00	H23		2%	19.00	85.35	104.35	555.74	556.41	0 + 19.00	2.00	2.83	556.79	558.79	560.44	563.87	
617	76.00	H20	H19	2%	31.00	85.55	116.55	550.06	550.73	0 + 31.00	0.00	0.00	551.35	551.35	553.06	556.15	
618	76.00	H20	H19	2%	31.00	85.98	116.98	550.06	550.73	0 + 31.00	0.00	0.00	551.35	551.35	553.07	556.95	
619	186.00	H20	H19	2%	31.00	85.98	116.98	551.56	552.23	0 + 31.00	0.00	0.00	552.85	552.85	554.57	557.45	
620	186.00	H20	H19	2%	31.00	85.98	116.98	551.56	552.23	0 + 31.00	1.00	1.41	552.85	553.85	555.54	558.55	
621	22.47	H21	H20	2%	31.00	85.98	116.98	553.08	553.75	0 + 31.00	0.00	0.00	554.37	554.37	556.09	559.35	
622	22.47	H21	H20	2%	31.00	85.98	116.98	553.08	553.75	0 + 31.00	1.00	1.41	554.37	555.37	557.06	560.15	
623	564.19	H21	H20	2%	31.00	85.98	116.98	553.96	554.63	0 + 31.00	1.00	1.41	555.25	556.25	557.94	561.10	
624	197.47	H21	H20	2%	31.00	85.98	116.98	554.83	555.50	0 + 31.00	1.00	1.41	556.12	557.12	558.81	561.90	
625	197.47	H21	H20	2%	31.00	85.98	116.98	554.83	555.50	0 + 31.00	2.00	2.83	556.12	558.12	559.78	562.81	
626	8.29	H23	H21	2%	31.00	85.17	116.17	555.74	556.41	0 + 31.00	1.00	1.41	557.03	558.03	559.71	563.36	
627	8.29	H23	H21	2%	31.00	86.75	117.75	555.74	556.41	0 + 31.00	2.00	2.83	557.03	559.03	560.71	564.20	
628	164.16	H6	H5	2%	19.01	83.87	102.88	549.84	550.51	0 + 19.01	0.00	0.00	550.89	550.89	552.57	556.39	
629	164.16	H6	H5	2%	19.01	84.31	103.32	549.84	550.51	0 + 19.01	1.00	1.41	550.89	551.89	553.55	557.21	
630	32.96	H7	H6	2%	19.00	84.31	103.31	551.26	551.93	0 + 19.00	1.00	1.41	552.31	553.31	554.97	558.04	
631	32.96	H7	H6	2%	19.00	84.31	103.31	551.26	551.93	0 + 19.00	1.00	1.41	552.31	553.31	554.97	558.86	
632	142.96	H7	H6	2%	19.00	84.31	103.31	553.10	553.77	0 + 19.00	0.00	0.00	554.15	554.15	555.84	559.68	
633	142.96	H7	H6	2%	19.00	84.31	103.31	553.10	553.77	0 + 19.00	1.00	1.41	554.15	555.15	556.81	560.58	
634	262.96	H7	H6	2%	19.00	84.31	103.31	555.11	555.78	0 + 19.00	1.00	1.41	556.16	557.16	558.82	562.31	
635	262.96	H7	H6	2%	19.00	84.31	103.31	555.11	555.78	0 + 19.00	3.00	4.24	556.16	559.16	560.76	564.20	
636	372.96	H7	H6	2%	19.00	84.31	103.31	556.95	557.62	0 + 19.00	3.00	4.24	558.00	561.00	562.60	566.09	
637	372.96	H7	H6	2%	19.00	84.31	103.31	556.95	557.62	0 + 19.00	5.00	7.07	558.00	563.00	564.54	568.03	
638	0.00	H8		2%	17.93	85.47	103.40	561.80	562.47	0 + 17.93	1.00	1.41	562.83	563.83	565.51	569.14	
639	0.00	H8		2%	17.93	84.04	101.97	561.80	562.47	0 + 17.93	1.00	1.41	562.83	563.83	565.48	569.14	
640	112.51	H17	H2	2%	33.02	86.26	119.28	546.06	546.73	0 + 33.02	0.00	0.00	547.39	547.39	549.12	551.28	
641	112.51	H17	H2	2%	33.02	86.26	119.28	546.06	546.73	0 + 33.02	0.00	0.00	547.39	547.39	549.12	551.87	
642	78.28	H5	H4	2%	21.05	76.63	97.68	547.12	547.79	0 + 21.05	0.00	0.00	548.21	548.21	549.74	551.90	
643	162.28	H5	H4	2%	21.04	84.08	105.12	547.62	548.29	0 + 21.04	0.00	0.00	548.71	548.71	550.39	552.87	
644	62.95	H19	H17	2%	34.36	75.76	110.12	548.58	549.25	0 + 34.36	0.00	0.00	549.94	549.94	551.45	554.48	
645	60.00	H22	H19	2%	33.00	86.20	119.20	549.32	549.99	0 + 33.00	1.00	1.41	550.65	551.65	553.35	556.43	
646	60.00	H22	H19	2%	33.00	86.25	119.25	549.32	549.99	0 + 33.00	1.00	1.41	550.65	551.65	553.35	556.86	
647	0.00	H22		2%	35.18	86.98	122.16	549.82	550.49	0 + 35.18	0.00	0.00	551.19	551.19	552.93	556.04	
648	0.00	H22		2%	35.18	85.55	120.73	549.82	550.49	0 + 35.18	0.00	0.00	551.19	551.19	552.90	556.04	
649	0.00	H10		2%	36.83	85.92	122.75	561.33	562.00	0 + 36.83	0.00	0.00	562.74	562.74	564.46	568.09	
650	0.00	H10		2%	36.83	84.04	120.87	561.33	562.00	0 + 36.83	0.00	0.00	562.74	562.74	564.42	566.64	
651	248.92	H10	H9	2%	33.45	85.13	118.58	558.07	558.74	0 + 33.45	0.00	0.00	559.41	559.41	561.11	565.03	
652	248.92	H10	H9	2%	33.45	85.14	118.59	558.07	558.74	0 + 33.45	0.00	0.00	559.41	559.41	561.11	563.28	
653	133.08	H10	H9	2%	33.24	85.14	118.38	554.18	554.85	0 + 33.24	1.00	1.41	555.51	556.51	558.19	561.53	
654	133.08	H10	H9	2%	33.24	85.14	118.38	554.18	554.85	0 + 33.24	0.00	0.00	555.51	555.51	557.22	559.78	
655	41.71	H10	H9	2%	33.08	74.00	107.08	551.11	551.78	0 + 33.08	1.00	1.41	552.44	553.44	554.89	558.03	
656	323.39	H9	H4	2%	33.00	74.00	107.00	549.48	550.15	0 + 33.00	1.00	1.41	550.81	551.81	553.26	556.28	
657	245.39	H9	H4	2%	32.98	84.31	117.29	548.80	549.47	0 + 32.98	0.00	0.00	550.13	550.13	551.82	554.62	
658	245.39	H9	H4	2%	32.98	84.31	117.29	548.80	549.47	0 + 32.98	0.00	0.00	550.13	550.13	551.82	552.96	HUNG SEWER
659	135.39	H9	H4	2%	32.96	84.31	117.27	547.84	548.51	0 + 32.96	0.00	0.00	549.17	549.17	550.86	551.32	HUNG SEWER
660	135.39	H9	H4	2%	32.96	84.31	117.27	547.84	548.51	0 + 32.96	0.00	0.00	549.17	549.17	550.86	550.15	HUNG SEWER
661	0.00	H4		2%	32.94	84.31	117.25	546.55	547.22	0 + 32.94	0.00	0.00	547.88	547.88	549.57	550.22	HUNG SEWER
662	0.00	H4		2%	32.94	84.31	117.25	546.55	547.22	0 + 32.94	0.00	0.00	547.88	547.88	549.57	551.04	HUNG SEWER
663	110.58	H5	H4	2%	32.95	84.31	117.26	547.31	547.98	0 + 32.95	0.00	0.00	548.64	548.64	550.33	551.86	
664	110.58	H5	H4	2%	32.95	84.31	117.26	547.31	547.98	0 + 32.95	0.00	0.00	548.64	548.64	550.33	552.67	
665	212.50	H5	H4	2%	32.97	80.49	113.46	547.92	548.59	0 + 32.97	0.00	0.00	549.25	549.25	550.86	552.69	
666	31.30	H6	H5	2%	30.97	81.02	111.99	548.51	549.18	0 + 30.97	0.00	0.00	549.80	549.80	551.42	555.08	
667	132.81	H6	H5	2%	30.99	82.95	113.94	549.53	550.20	0 + 30.99	0.00	0.00	550.82	550.82	552.48	555.92	
668	193.30	H6	H5	2%	30.99	84.88	115.87	550.13	550.80	0 + 30.99	0.00	0.00	551.42	551.42	553.12	556.75	
669	193.30	H6	H5	2%	30.99	84.88	115.87	550.13	550.80	0 + 30.99	1.00	1.41	551.42	552.42	554.09	557.58	
670	66.11	H7	H6	2%	31.00	84.88	115.88	551.82	552.49	0 + 31.00	0.00	0.00	553.11	553.11	554.81	558.50	
671	66.11	H7	H6	2%	31.00	84.80	115.80	551.82	552.49	0 + 31.00	1.00	1.41	553.11	554.11	555.78	559.33	
672	137.96	H7	H6	2%	31.00	77.45	108.45	553.02	553.69	0 + 31.00	1.00	1.41	554.31	555.31	556.83	560.17	
673	204.02	H7	H6	2%	31.00	74.03	105.03	554.13	554.80	0 + 31.00	1.00	1.41	555.42	556.42	557.87	561.50	
674	294.11	H7	H6	2%	31.00	84.88	115.88	555.63	556.30	0 + 31.00	1.00	1.41	556.92	557.92	559.59	563.33	
675	294.11	H7	H6	2%	31.00	84.88	115.88	555.63	556.30	0 + 31.00	3.00	4.24	556.92	559.92	561.53	565.25	
676	408.11	H7	H6	2%	30.91	84.98	115.89	557.54	558.21	0 + 30.91	3.00	4.24	558.83	561.83	563.44	567.17	
677	408.11	H7	H6	2%	30.91	84.80	115.71	557.54	558.21	0 + 30.91	4.00	5.66	558.83	562.83	564.41	568.33	
678	0.00	H8		2%	32.19	84.86	117.05	561.80	562.47	0 + 32.19	1.00	1.41	563.11	564.11	565.78	569.08	
679	0.00	H8		2%	32.19	84.89	117.08	561.80	562.47	0 + 32.19	1.00	1.41	563.11	564.11	565.78	569.08	

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
205 E. HIRST ROAD, SUITE 106
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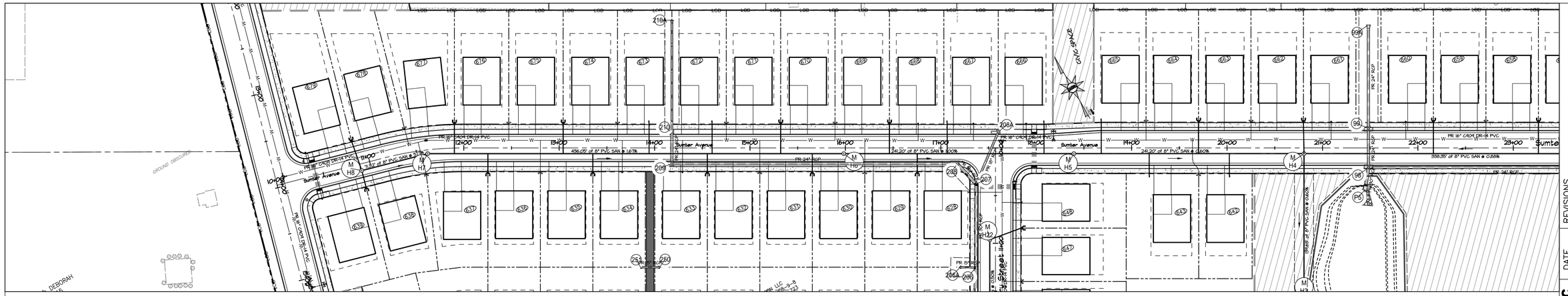
RICHARD J. DYER
REGISTERED
20684
STATE OF WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

SANITARY LATERAL TABLE

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD



SUMTER AVENUE

25 MPH POST SPEED

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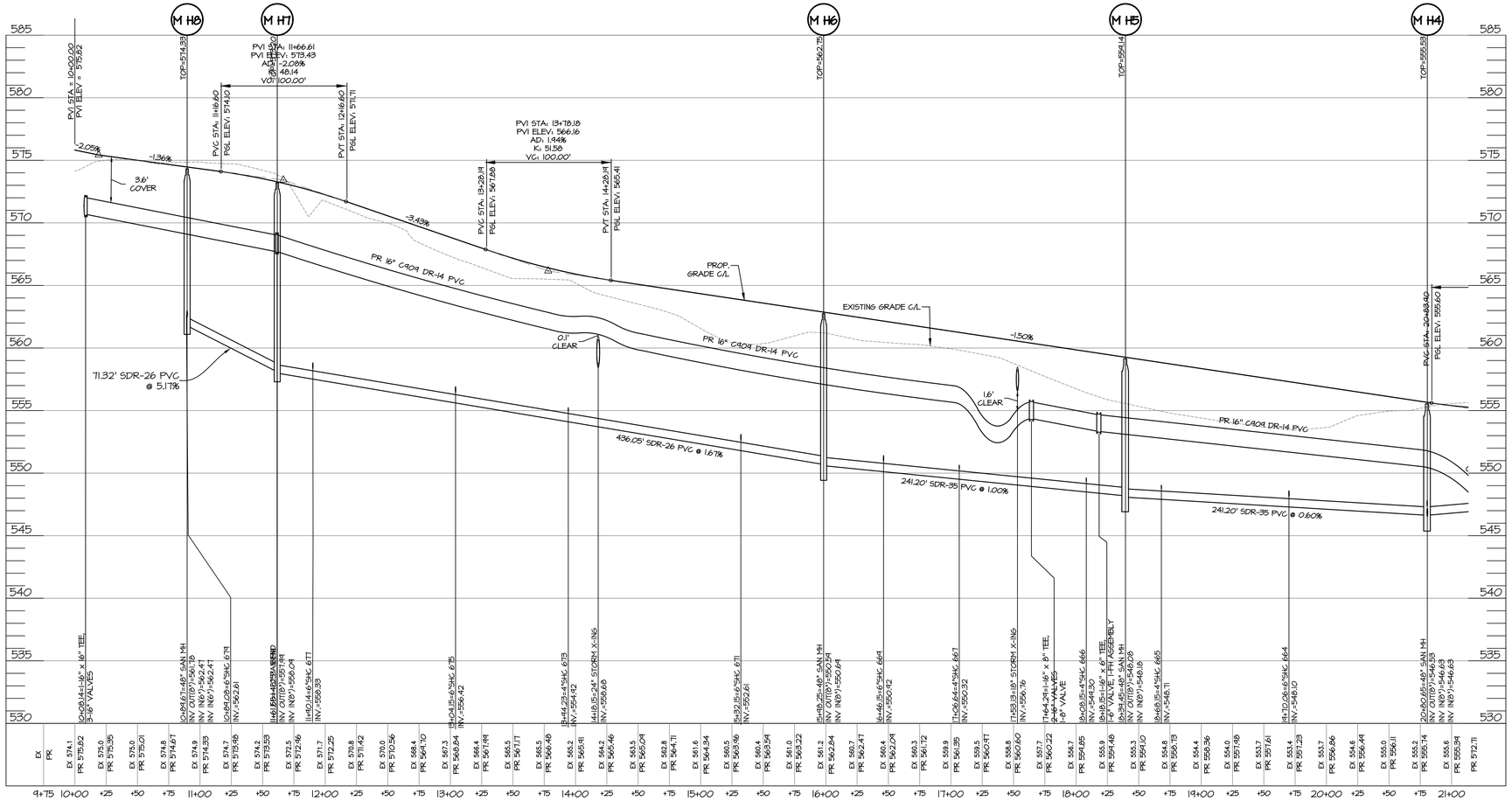
Scale 1" = 50'



Sumter Avenue PROFILE

SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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205 E. HIRST ROAD, SUITE 106
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RICHARD J. TYSKA
REGISTERED
20884
STATE OF
PROFESSIONAL ENGINEER
7/28/25

SUMTER AVENUE ROAD PROFILE

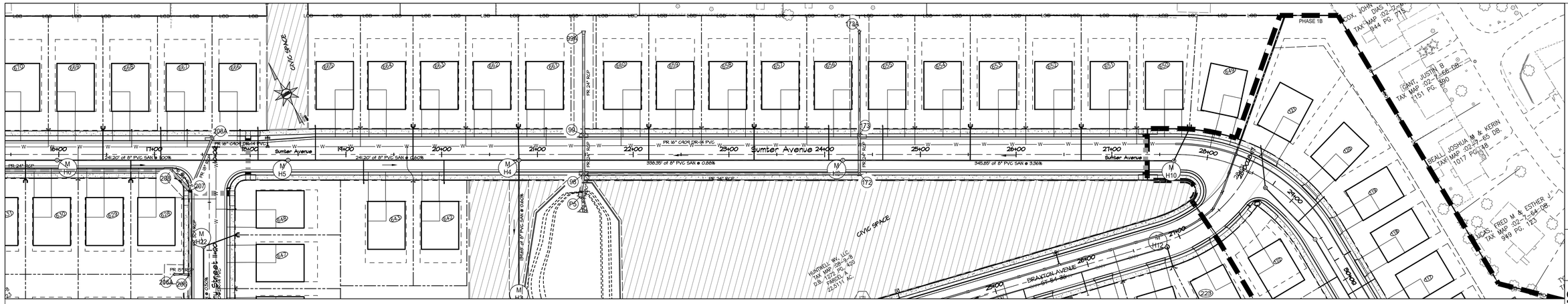
HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1" = 50'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	22 OF 71



SUMTER AVENUE

25 MPH POST SPEED

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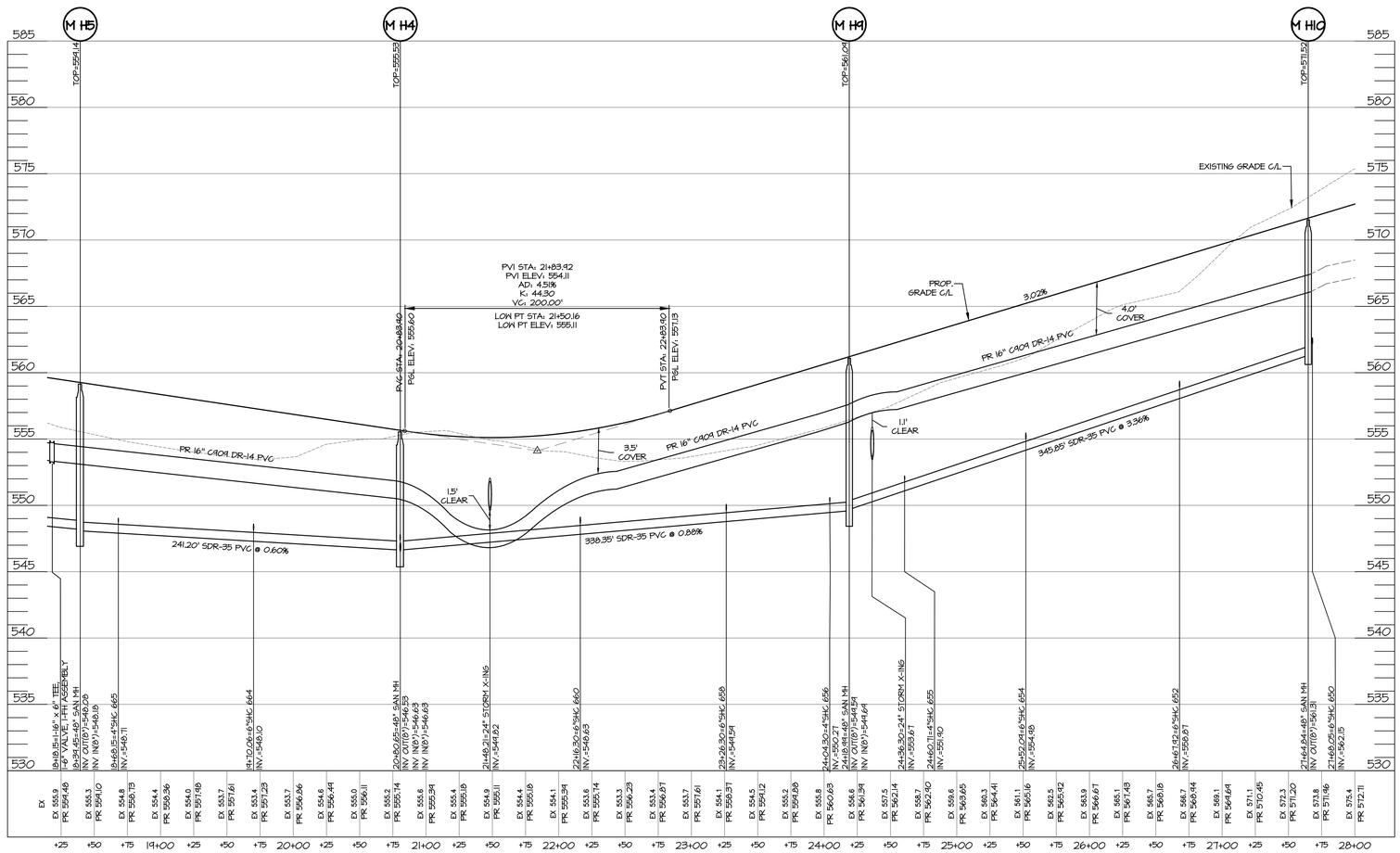
Scale 1" = 50'



Sumter Avenue PROFILE

SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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RICHARD J. DEEN
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

SUMTER AVENUE ROAD PROFILE

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

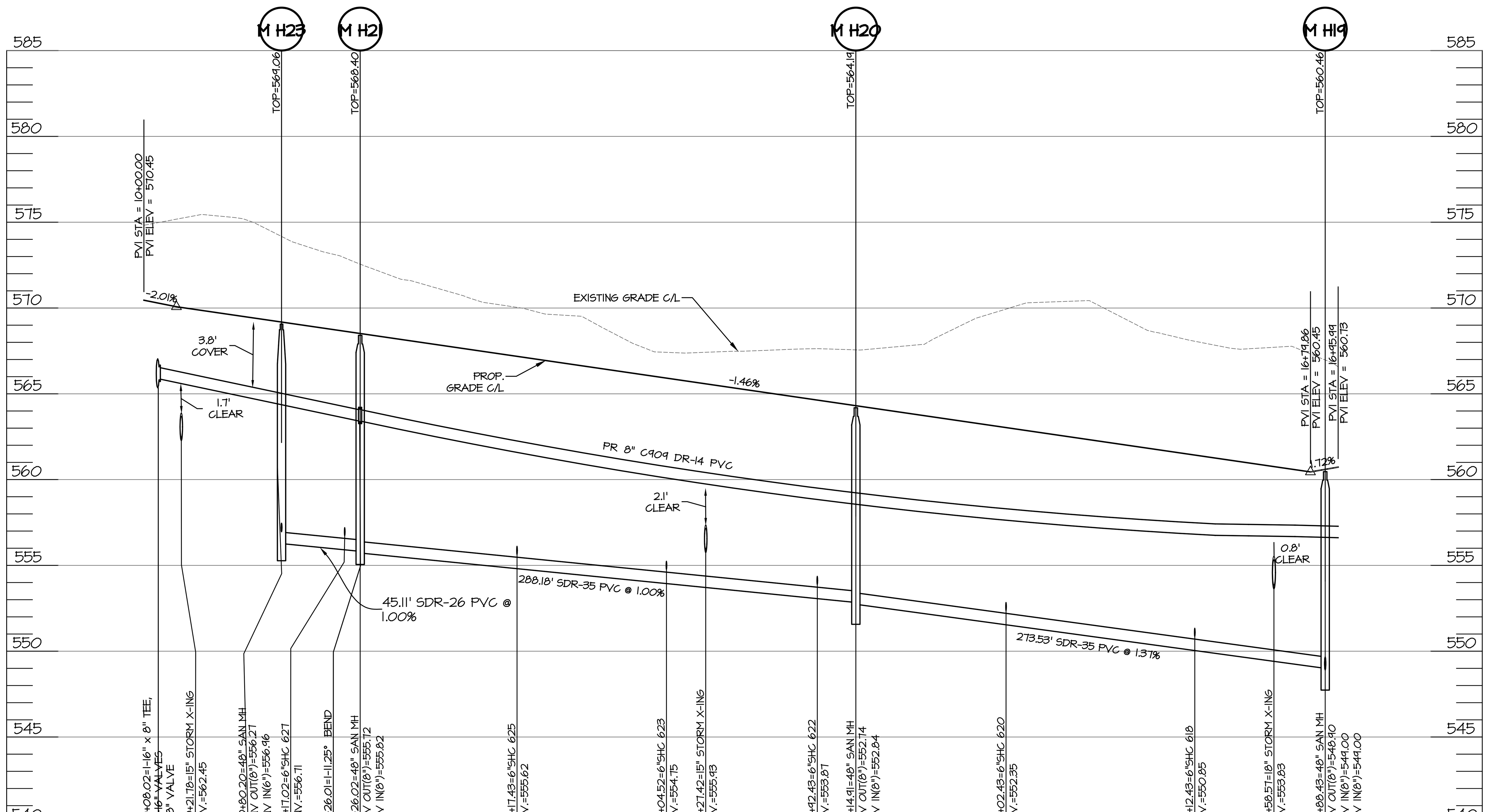
JOB NO.:	21115
SCALE:	1" = 50'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	23 OF 71

BARTLETT AVENUE

25 MPH POST SPEED

50 0 50 100 150

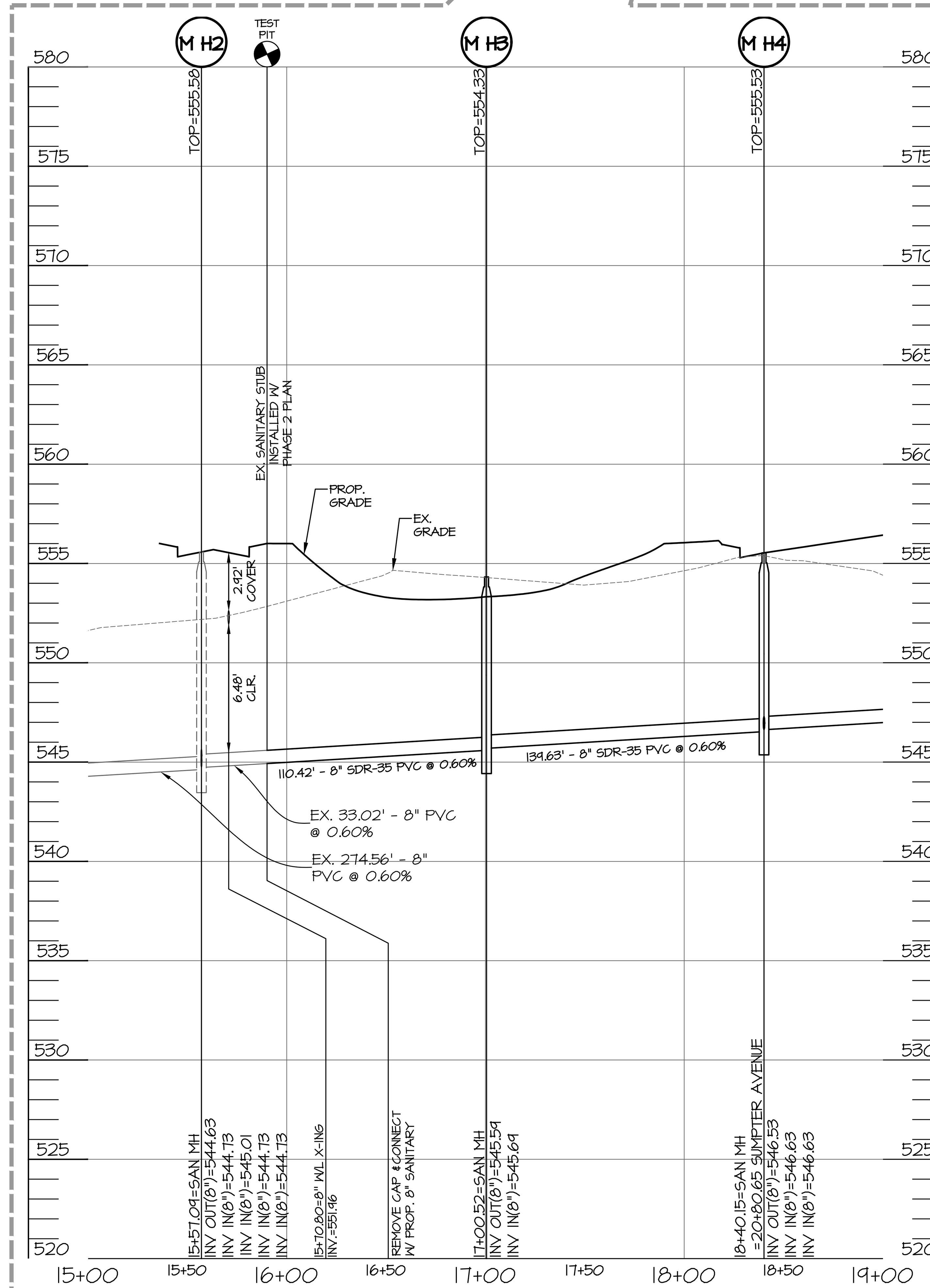
Scale 1" = 50'



	9+50	+75	10+00	+25	+50	+75	11+00	+25	+50	+75	12+00	+25	+50	+75	13+00	+25	+50	+75	14+00	+25	+50	+75	15+00	+25	+50	+75	16+00	+25	+50	+75	17+00	+25	+50
EX			574.8	575.3	575.3	574.4	573.4	572.6	571.7	571.0	570.3	569.9	569.5	568.5	567.4	567.4	567.5	567.6	567.6	567.6	567.8	568.9	569.9	570.3	570.4	569.2	568.3	567.8	567.7	567.5			
PR			570.45	569.98	569.62	569.26	568.89	568.53	568.16	567.80	567.44	567.07	566.71	566.34	565.98	565.62	565.25	564.89	564.52	564.16	563.80	563.43	563.07	562.70	562.34	561.98	561.61	561.25	560.88	560.52			

Bartlett Avenue PROFILE

SCALE: H: 1"=50'
V: 1"=5'



H1-H8

SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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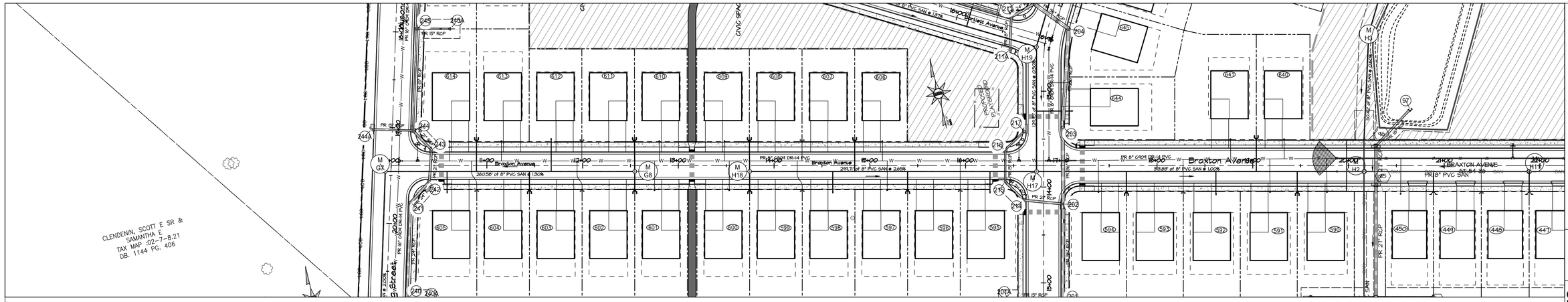
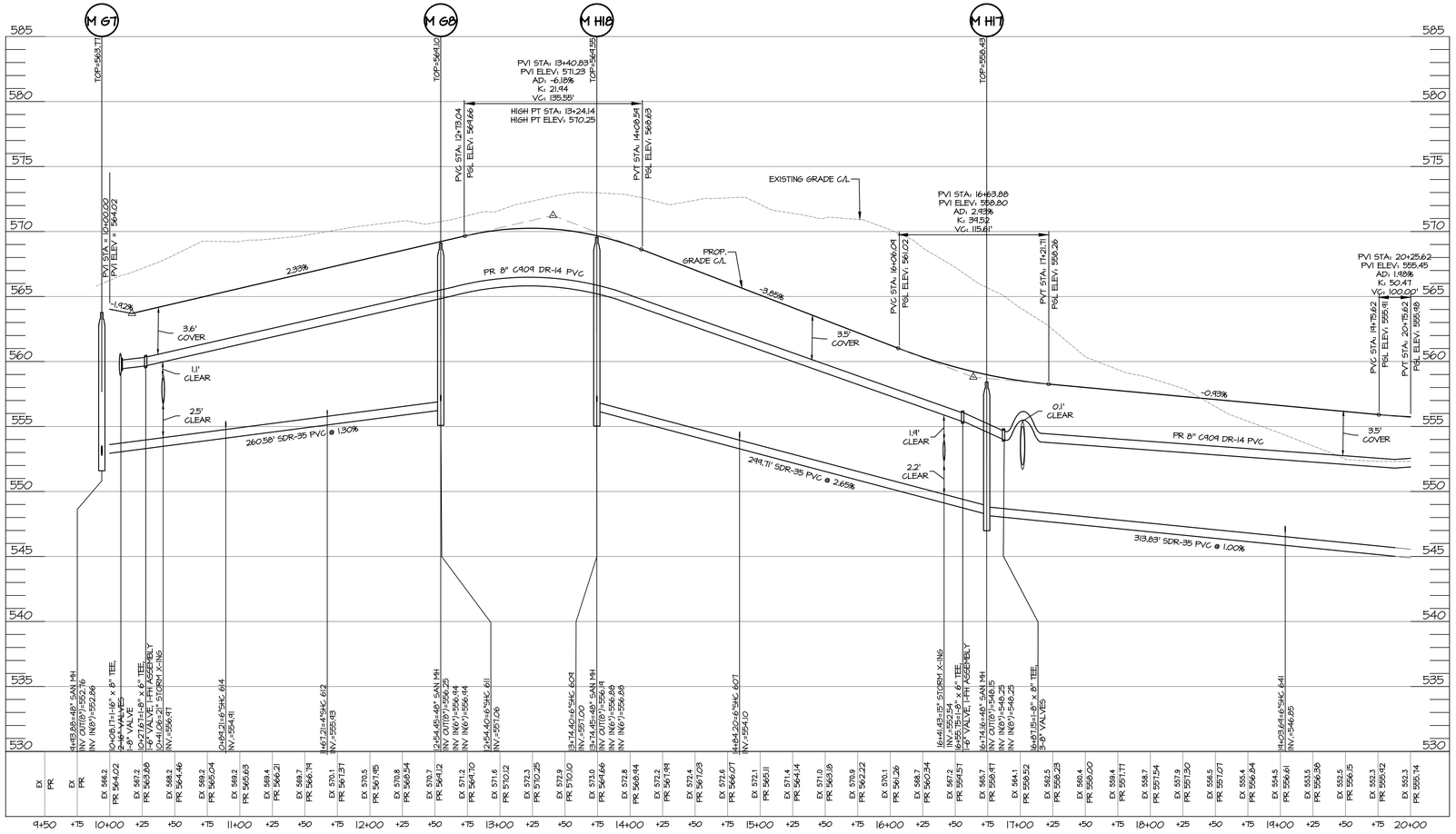
BARTLETT AVENUE ROAD PROFILE

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: 1" = 50'
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 24 OF 71





Braxton Avenue PROFILE

SCALE: H: 1"=50'
V: 1"=5'

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DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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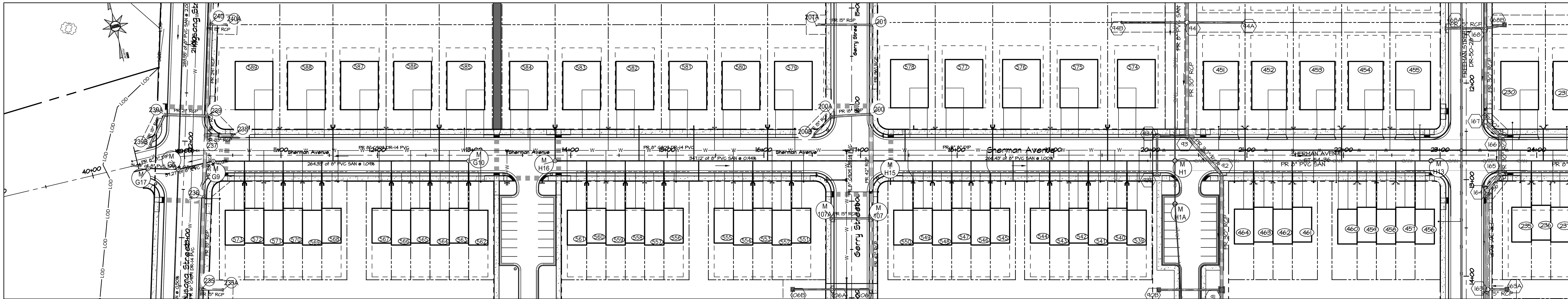
BRAXTON AVENUE ROAD PROFILE

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

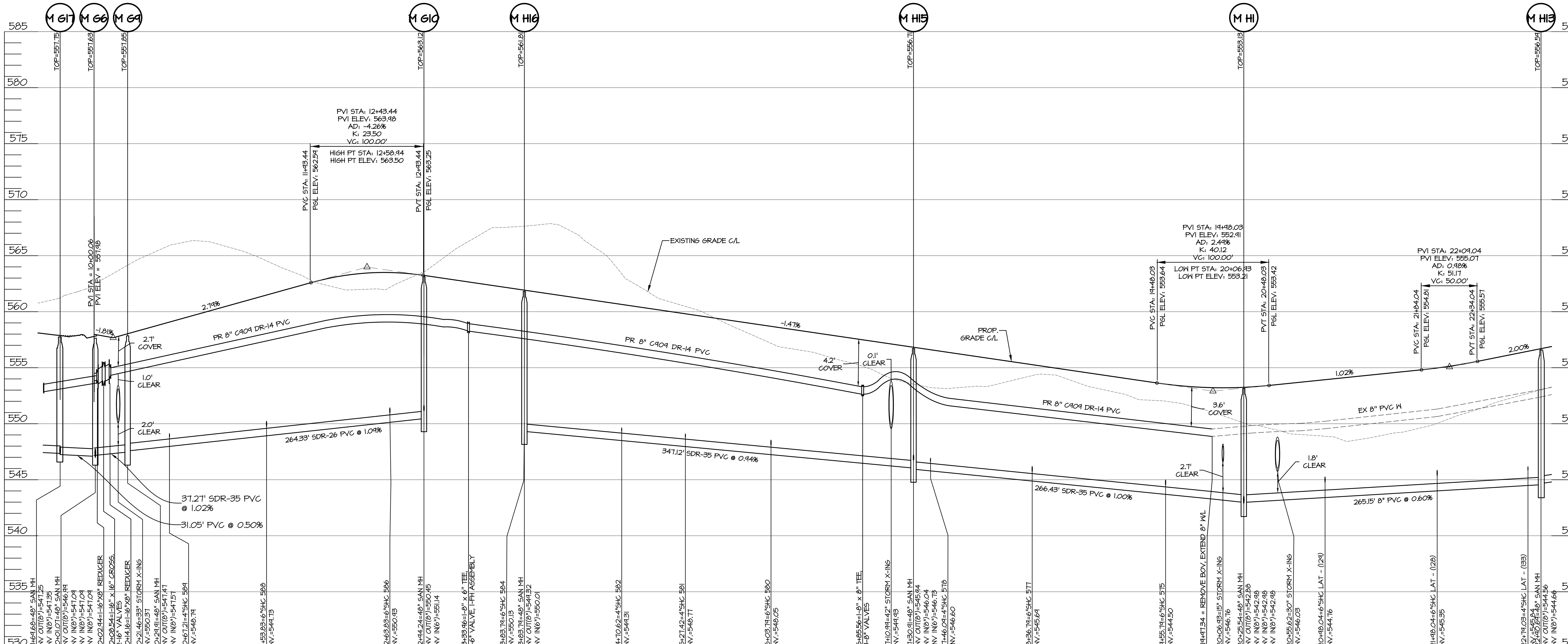
JOB NO.:	21115
SCALE:	1" = 50'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	25 OF 71



SHERMAN AVENUE

25 MPH POST SPEED

Scale 1" = 50'



9+50	+75	10+00	+25	+50	+75	11+00	+25	+50	+75	12+00	+25	+50	+75	13+00	+25	+50	+75
EX / PR	EX / PR	EX / PR	EX 563.9 / PR 557.90	EX 565.2 / PR 558.59	EX 566.1 / PR 559.29	EX 566.3 / PR 559.99	EX 565.6 / PR 560.68	EX 564.7 / PR 561.38	EX 563.6 / PR 562.08	EX 562.5 / PR 562.76	EX 561.9 / PR 563.26	EX 562.0 / PR 563.49	EX 562.7 / PR 563.45	EX 563.9 / PR 563.15	EX 565.8 / PR 562.79	EX 567.2 / PR 562.42	EX 567.6 / PR 562.05

14+00	+25	+50	+75	15+00	+25	+50	+75	16+00	+25	+50	+75	17+00	+25	+50	+75	18+00	+25
EX 567.8 / PR 561.69	EX 567.2 / PR 561.32	EX 565.5 / PR 560.95	EX 562.9 / PR 560.58	EX 561.4 / PR 560.22	EX 560.5 / PR 559.85	EX 559.6 / PR 559.48	EX 558.5 / PR 559.12	EX 557.3 / PR 558.75	EX 556.6 / PR 558.38	EX 556.1 / PR 558.02	EX 555.4 / PR 557.65	EX 554.5 / PR 557.28	EX 553.7 / PR 556.91	EX 553.2 / PR 556.55	EX 553.3 / PR 556.18	EX 553.4 / PR 555.81	EX 554.0 / PR 555.45

+50	+75	19+00	+25	+50	+75	20+00	+25	+50	+75	21+00	+25	+50	+75	22+00	+25	+50	+75	23+00
EX 554.4 / PR 555.08	EX 553.7 / PR 554.71	EX 553.0 / PR 554.35	EX 552.4 / PR 553.98	EX 552.1 / PR 553.61	EX 551.7 / PR 553.34	EX 551.0 / PR 553.21	EX 550.1 / PR 553.25	EX 549.6 / PR 553.44	EX 549.0 / PR 553.69	EX 548.9 / PR 553.95	EX 548.5 / PR 554.21	EX 549.0 / PR 554.46	EX 549.4 / PR 554.72	EX 550.1 / PR 555.00	EX 551.0 / PR 555.40	EX 551.9 / PR 555.89	EX 552.6 / PR 556.39	EX 553.2 / PR 556.89

Sherman Avenue PROFILE

SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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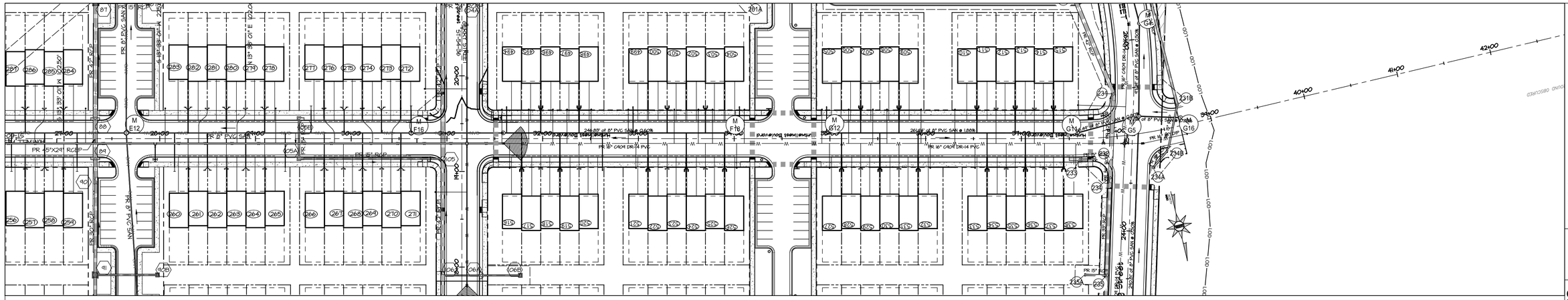
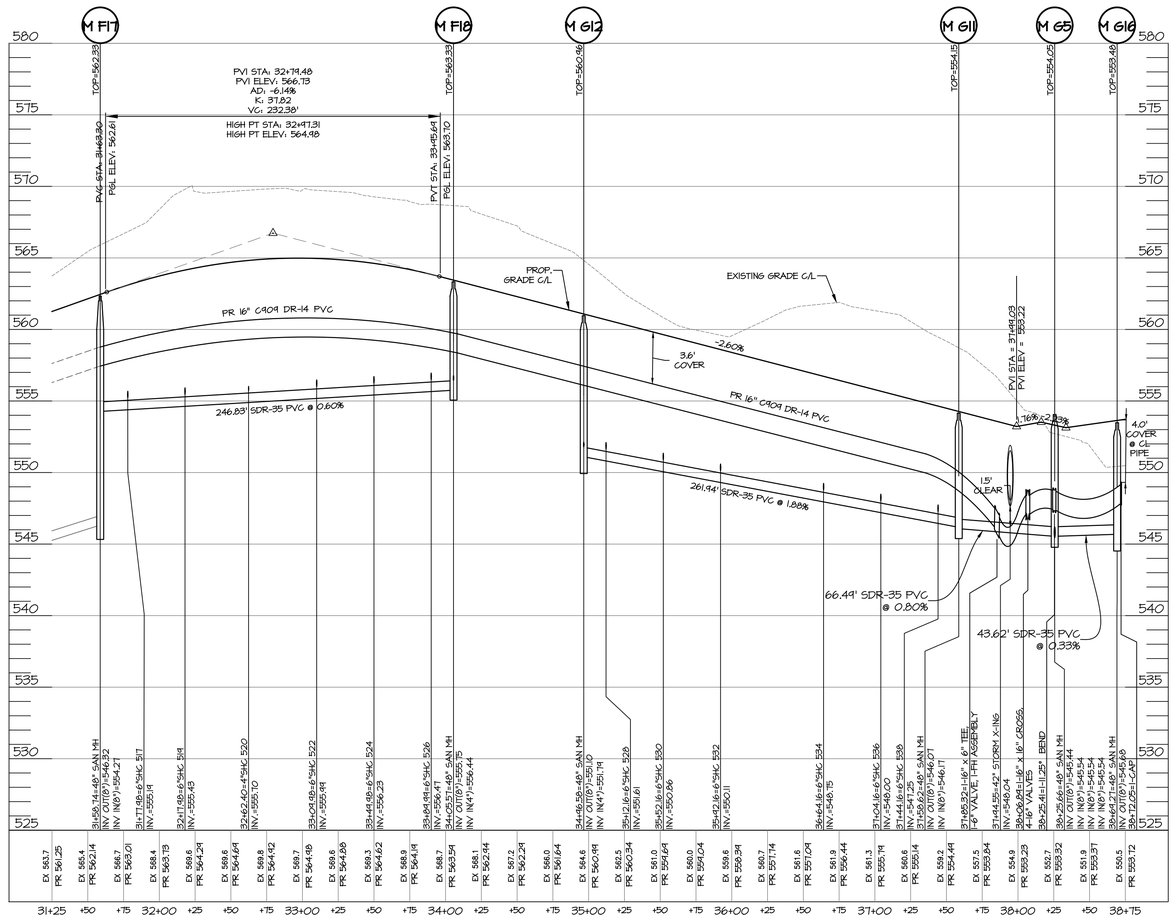
SHERMAN AVENUE ROAD PROFILE

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: 1" = 50'
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD





Huntwellwest Boulevard PROFILE
SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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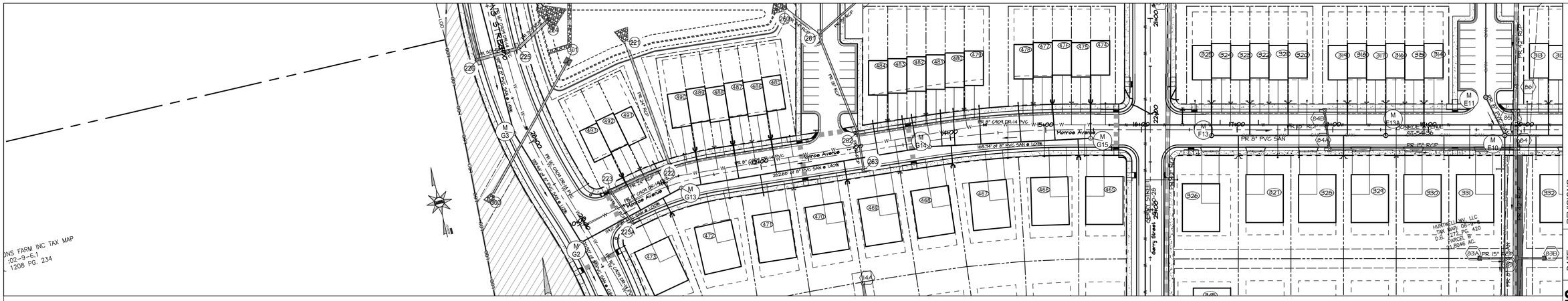
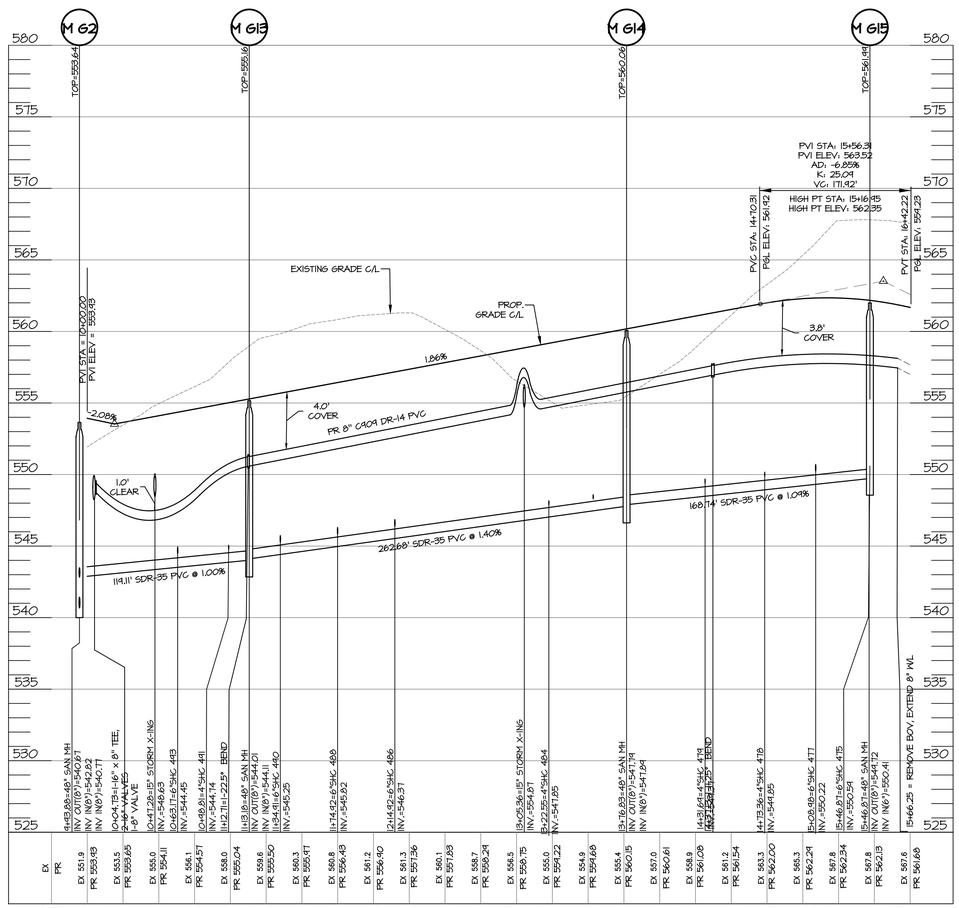
7/28/25

HUNTWELLWEST BOULEVARD ROAD PROFILE

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1" = 50'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	27 OF 71





Monroe Avenue PROFILE
SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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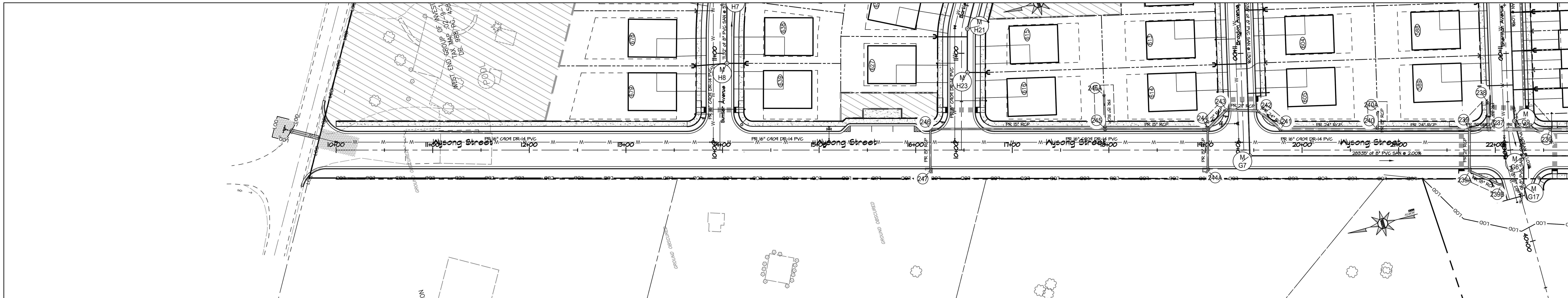
7/28/25

MONROE AVENUE ROAD PROFILE

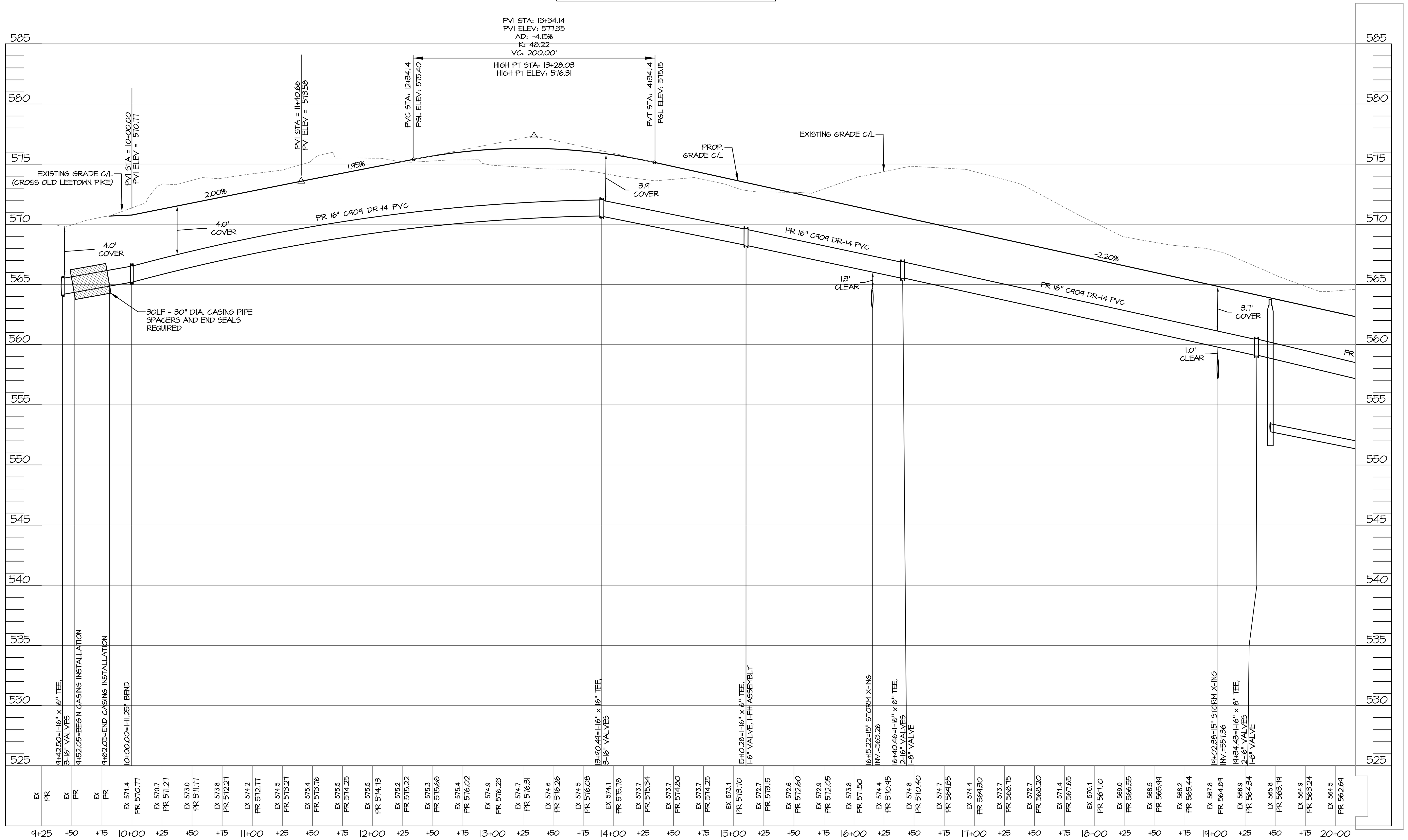
HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1" = 50'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	28 OF 71



WYSONG STREET
25 MPH POST SPEED

50 0 50 100 150
Scale 1" = 50'



Wysong Street PROFILE
SCALE: H: 1"=50'
V: 1"=5'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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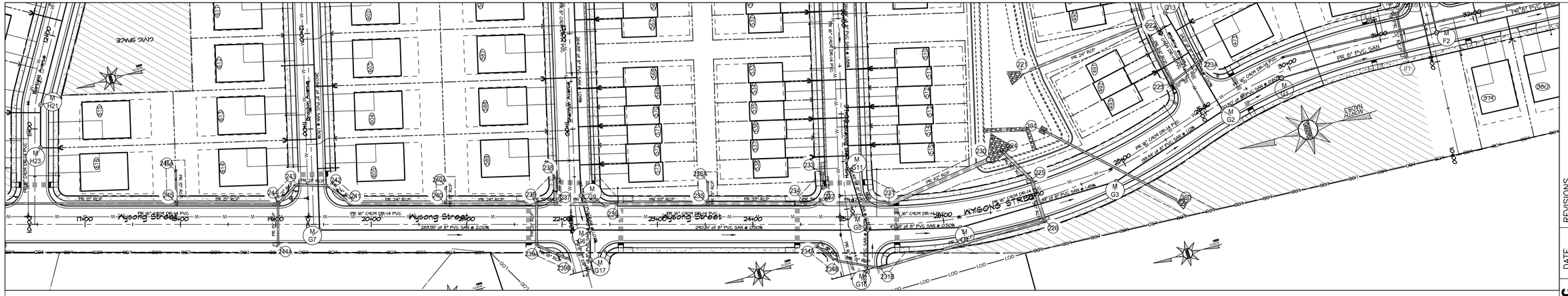
7/28/25

WYSONG STREET ROAD PROFILE

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: 1" = 50'
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD

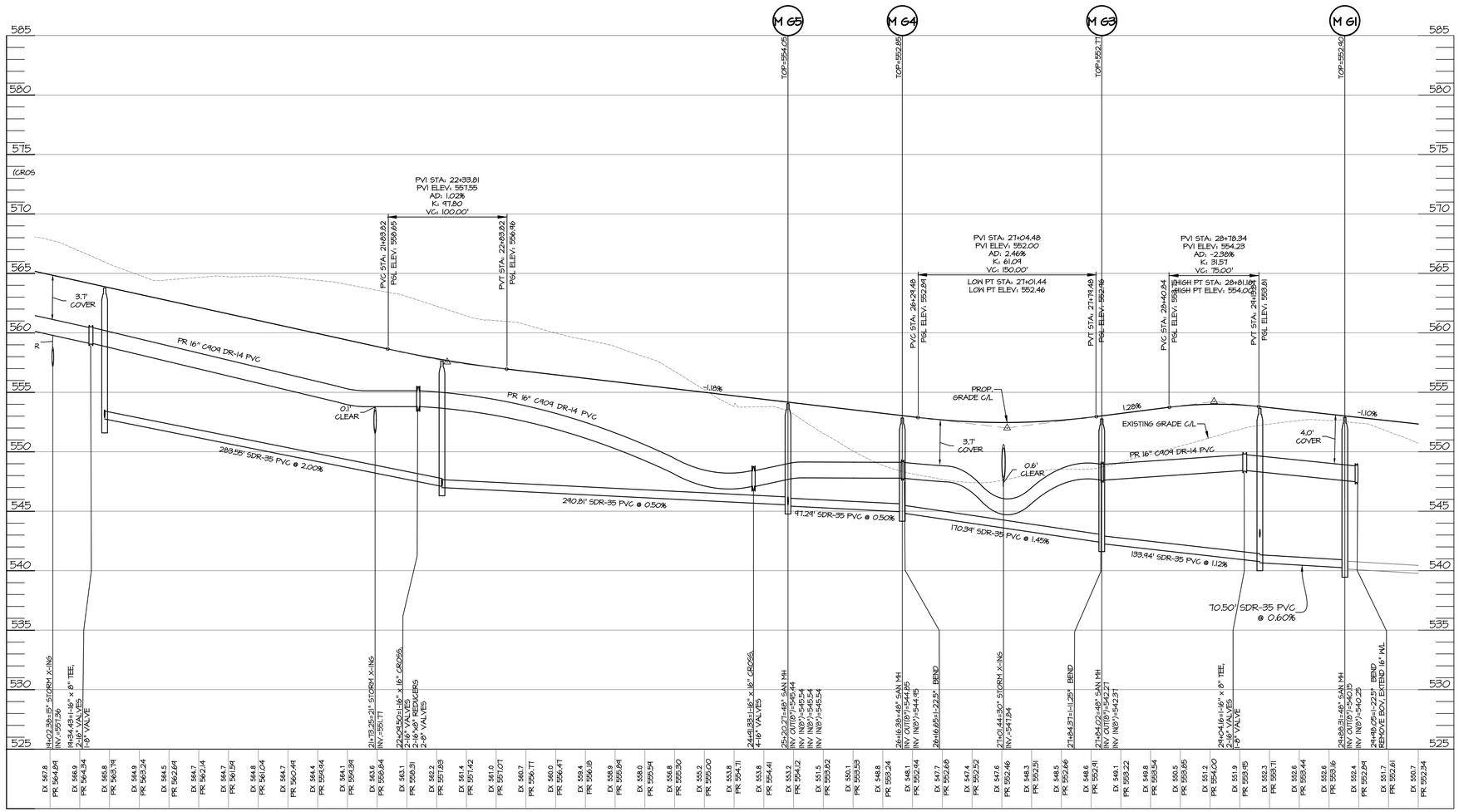


WYSONG STREET

25 MPH POST SPEED

50 0 50 100 150

Scale 1" = 50'



Wysong Street PROFILE

SCALE: H: 1"=50'
V: 1"=5'

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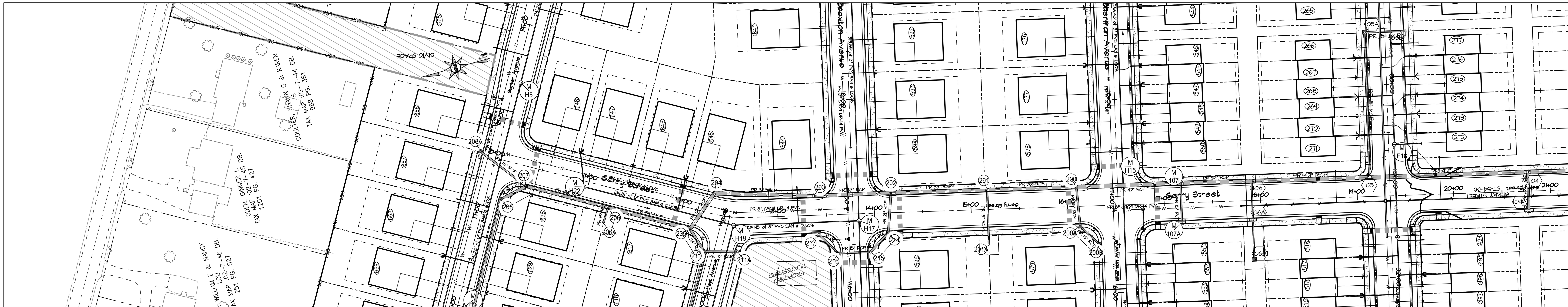
WYSONG STREET ROAD PROFILE

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

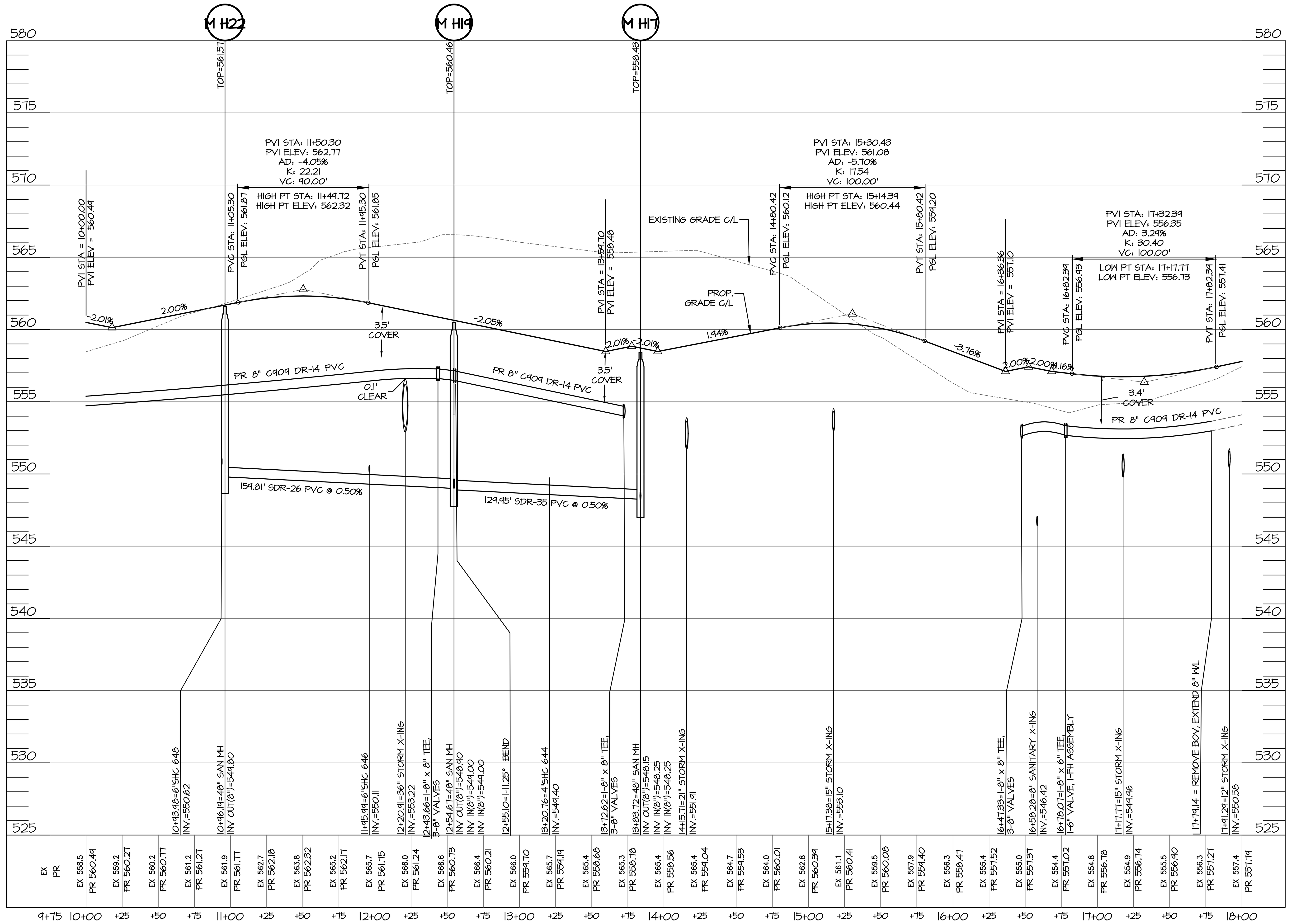
JOB NO.:	21115
SCALE:	1" = 50'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	30 OF 71



GERRY STREET

25 MPH POST SPEED

Scale 1" = 50'



Gerry Street PROFILE

SCALE: H: 1"=50'
V: 1"=5'

REVISIONS	
DATE	
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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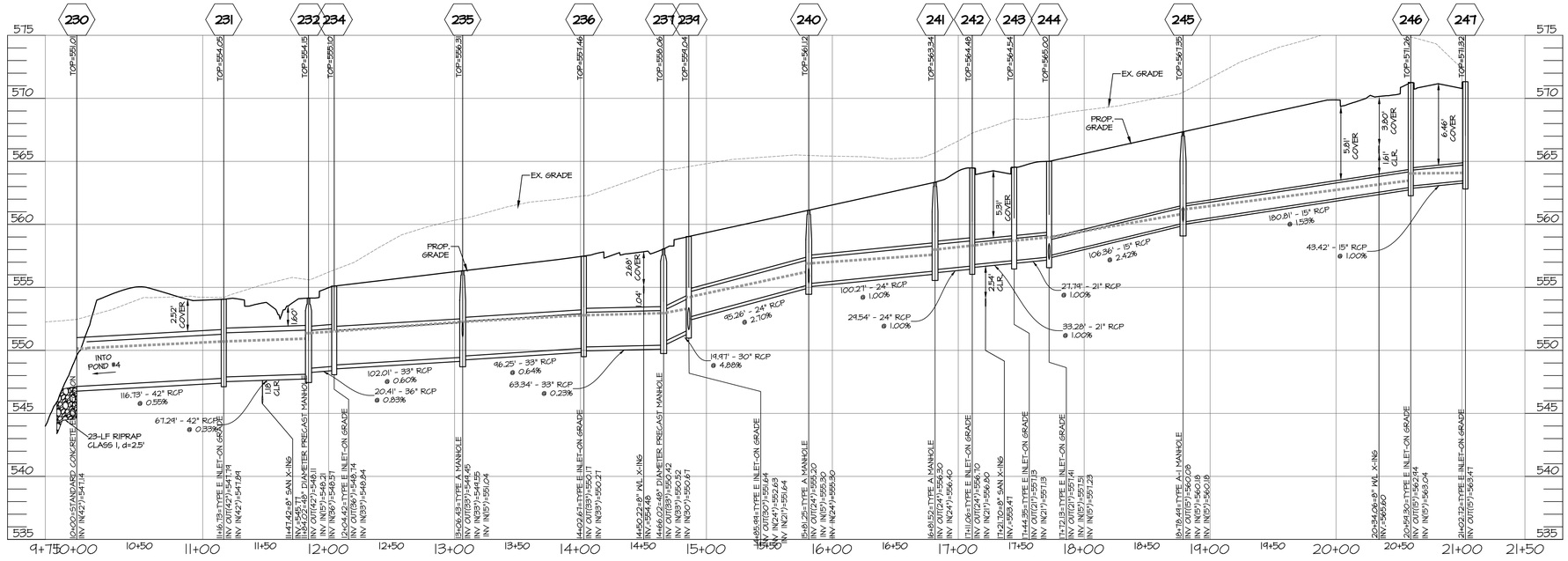
GERRY STREET ROAD PROFILE

HUNTWELL WEST

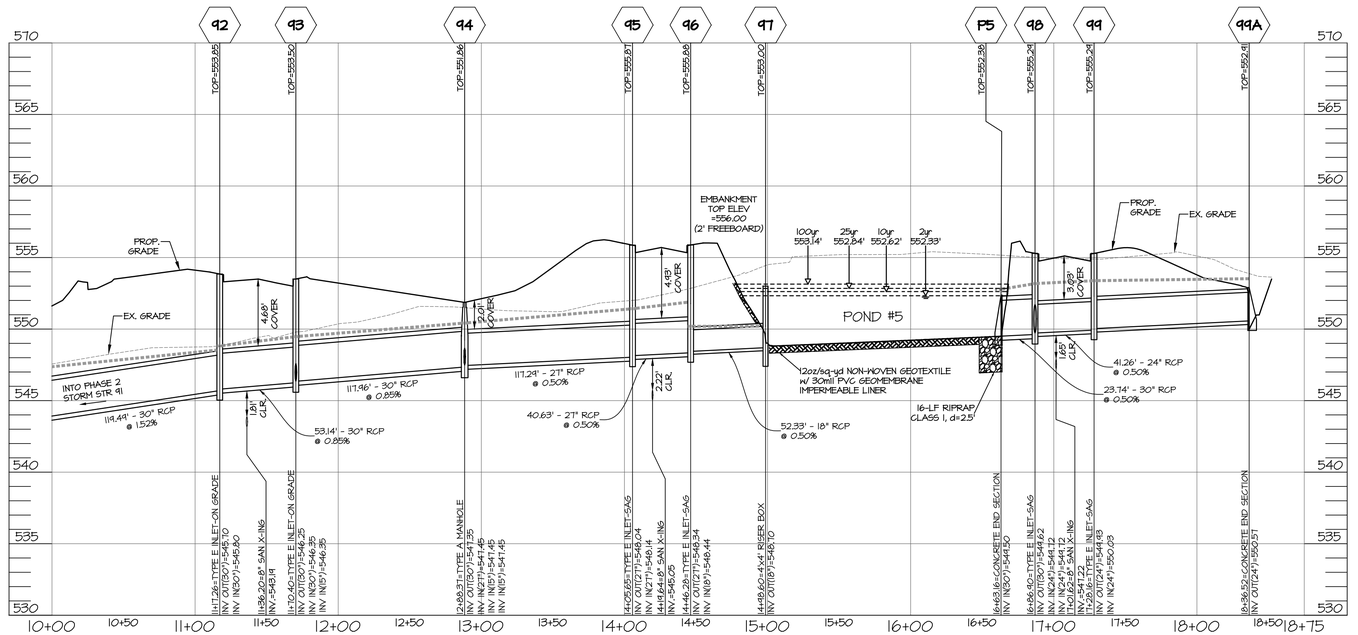
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115	
SCALE: 1" = 50'	
DATE: 04/18/2025	
DRAWN BY: KM/BZ	
DESIGN BY: KM/BZ	
REVIEW BY: RJD	
SHEET: 31 OF 71	



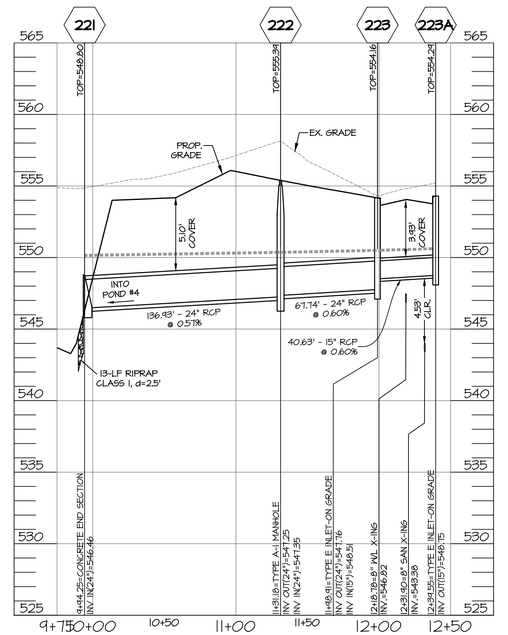
STR 230 TO 247

SCALE: H: 1"=50'
V: 1"=5'



STM 90-99A

SCALE: H: 1"=50'
V: 1"=5'



STR 221 TO 223A

SCALE: H: 1"=50'
V: 1"=5'

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DATE	REVISIONS
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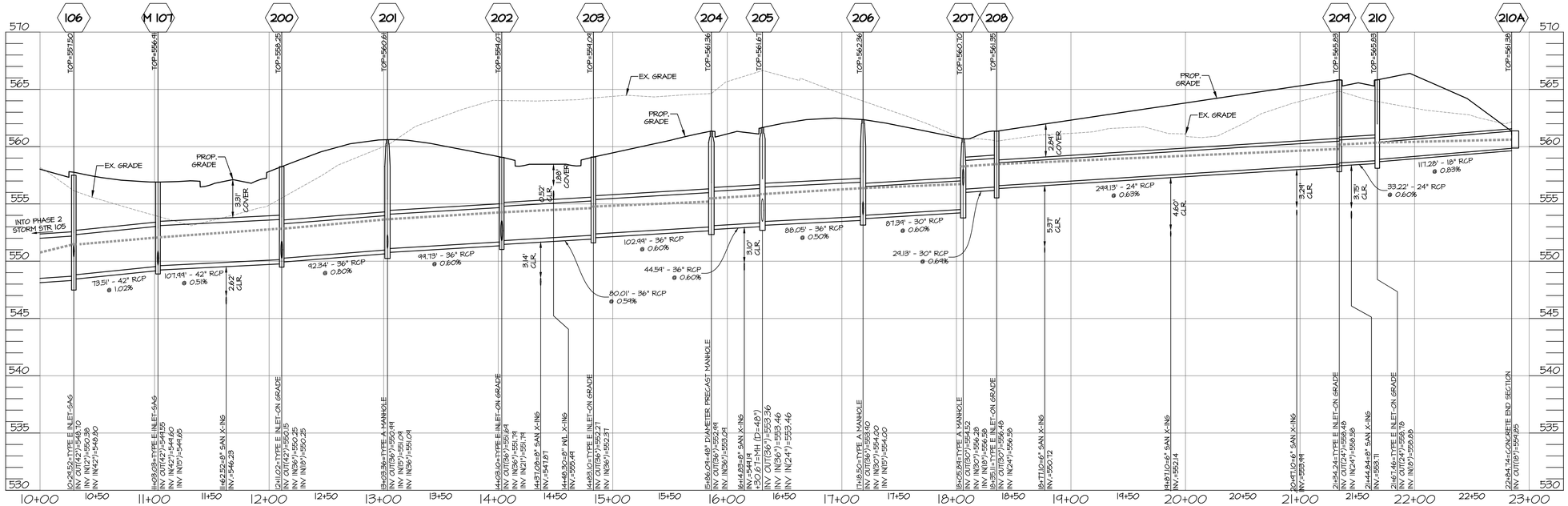
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

RICHARD J. DEER REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

STORM SEWER PROFILES

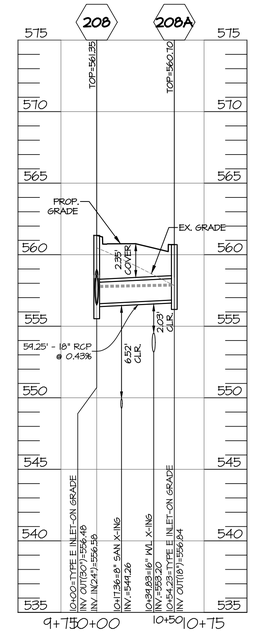
HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	32 OF 71



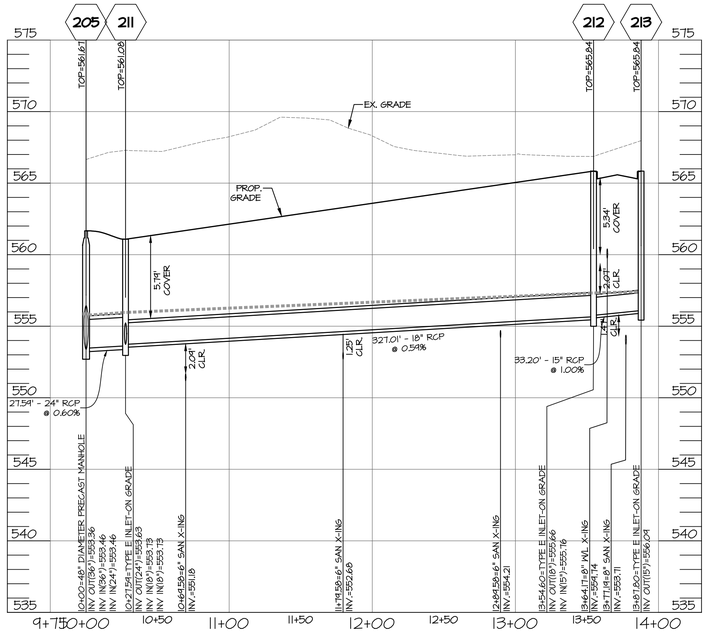
STM PHASE 3 NORTH

SCALE: H: 1"=50'
V: 1"=5'



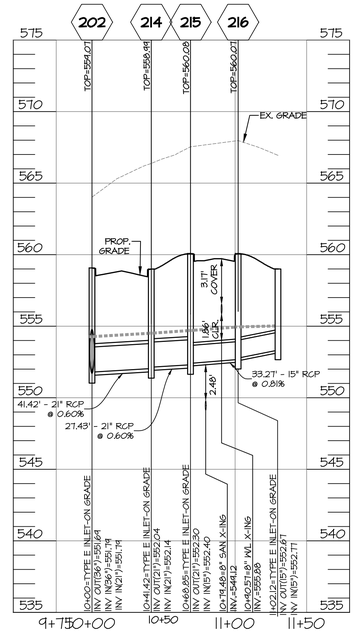
STR 208 to 208A

SCALE: H: 1"=50'
V: 1"=5'



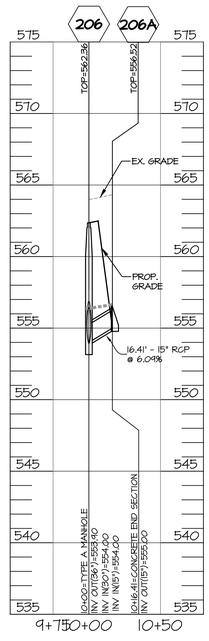
STR 205 TO 213

SCALE: H: 1"=50'
V: 1"=5'



STR 202 TO 217

SCALE: H: 1"=50'
V: 1"=5'



STR 206 TO 206A

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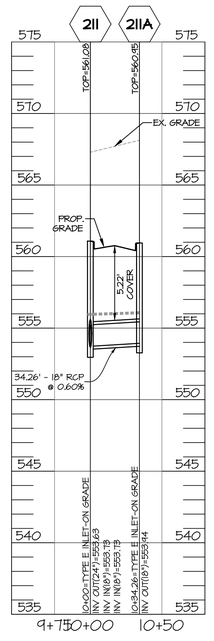
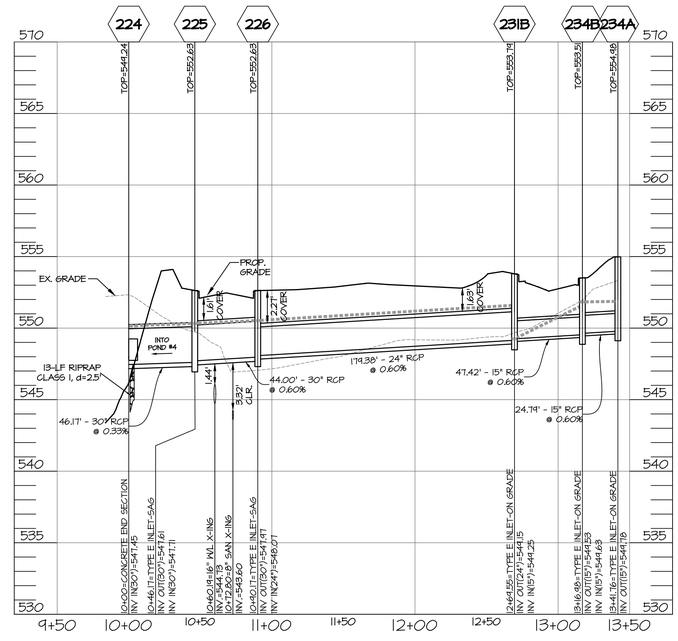
V: 1"=5'



STR 211 TO 211A

SCALE: H: 1"=50'
V: 1"=5'



STR 224 TO 234A

SCALE: H: 1"=50'
V: 1"=5'

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
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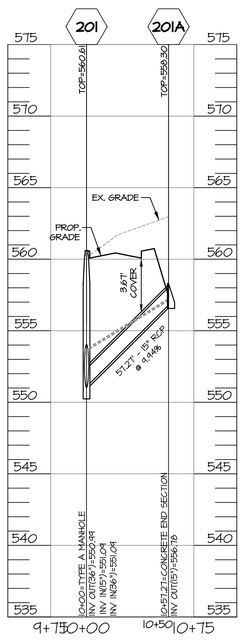
DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

RICHARD J. DEEM REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

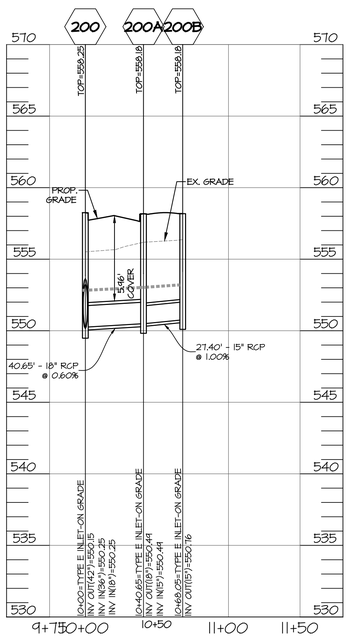
STORM SEWER PROFILES

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

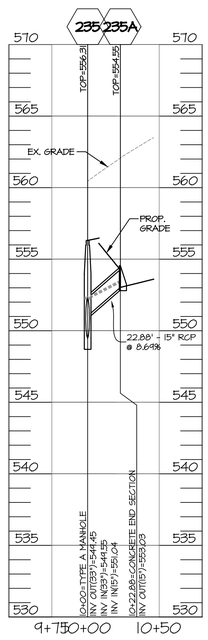
JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	33 OF 71



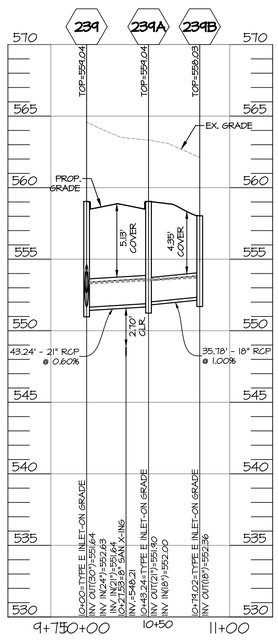
STR 201 TO 201A
SCALE: H: 1"=50'
V: 1"=5'



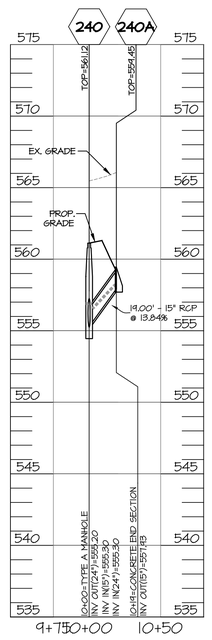
STR 200-200B
SCALE: H: 1"=50'
V: 1"=5'



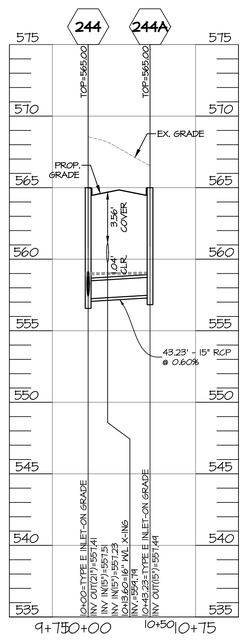
STR 235 TO 235A
SCALE: H: 1"=50'
V: 1"=5'



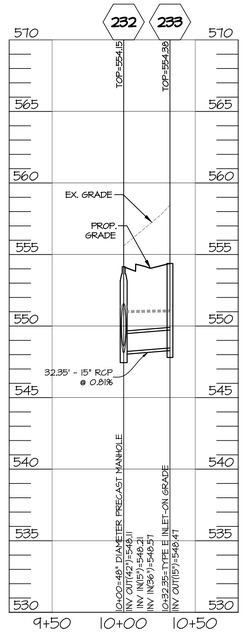
STR 239 TO 239B
SCALE: H: 1"=50'
V: 1"=5'



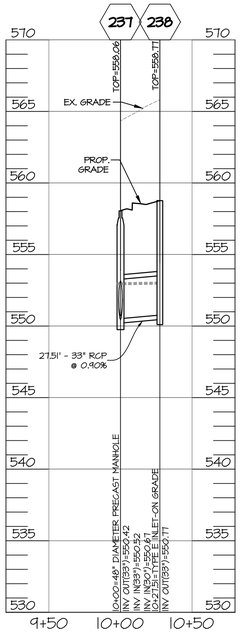
STR 240 TO 240A
SCALE: H: 1"=50'
V: 1"=5'



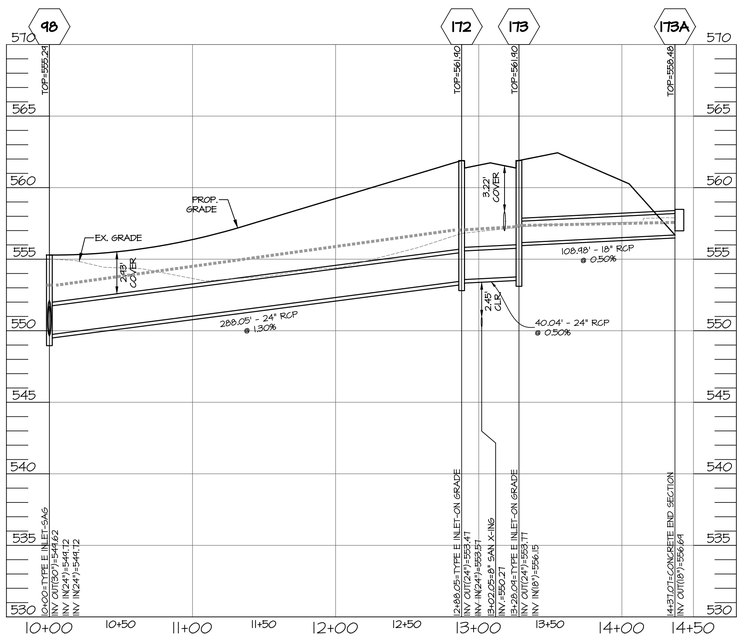
STR 244 TO 244A
SCALE: H: 1"=50'
V: 1"=5'



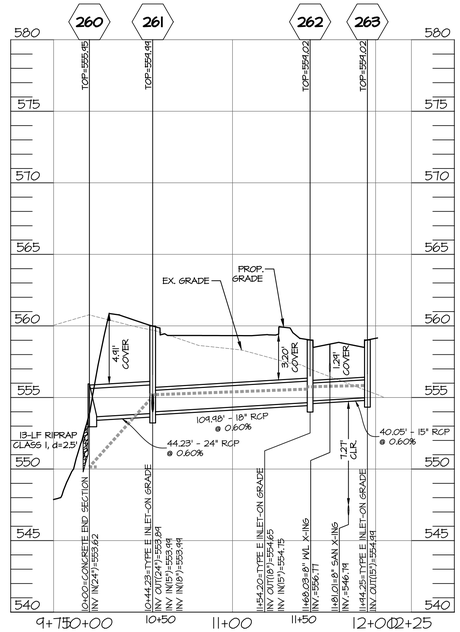
STR 232 TO 233
SCALE: H: 1"=50'
V: 1"=5'



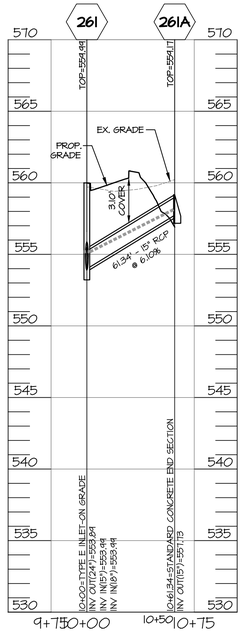
STR 237 TO 238
SCALE: H: 1"=50'
V: 1"=5'



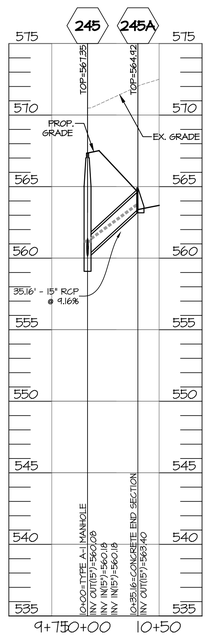
STM 171-173
SCALE: H: 1"=50'
V: 1"=5'



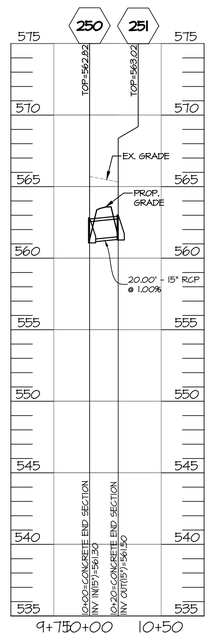
STR 260-263
SCALE: H: 1"=50'
V: 1"=5'



STR 261-261A
SCALE: H: 1"=50'
V: 1"=5'



STR 245 TO 245A
SCALE: H: 1"=50'
V: 1"=5'



STR 250 TO 251
SCALE: H: 1"=50'
V: 1"=5'

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DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. DILLER REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

STORM SEWER PROFILES

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	34 OF 71

POND #4 OUTFALL CULVERT DESIGN COMPUTATION

Culvert Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. — Wednesday, Apr 16 2025

Pond #4 Outfall Culvert

Invert Elev Dn (ft)	= 544.30
Pipe Length (ft)	= 160.00
Slope (%)	= 0.50
Invert Elev Up (ft)	= 545.10
Rise (in)	= 18.0
Shape	= Circular
Span (in)	= 18.0
No. Barrels	= 1
n-Value	= 0.012
Culvert Type	= Circular Concrete
Culvert Entrance	= Square edge w/headwall (C)
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5

Embankment

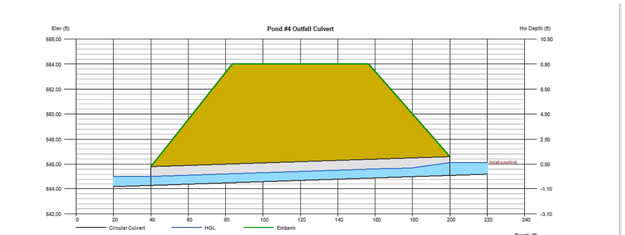
Top Elevation (ft)	= 554.00
Top Width (ft)	= 73.00
Crest Width (ft)	= 0.00

Calculations

Qmin (cfs)	= 3.52
Qmax (cfs)	= 3.52
Tailwater Elev (ft)	= Normal

Highlighted

Qtotal (cfs)	= 3.52
Qpipe (cfs)	= 3.52
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 4.23
Veloc Up (ft/s)	= 4.23
HGL Dn (ft)	= 545.02
HGL Up (ft)	= 545.82
Hw Elev (ft)	= 546.13
Hw/D (ft)	= 0.69
Flow Regime	= Inlet Control



STORMWATER INLET COMPUTATIONS

Inlet No.			Runoff to Inlet								Curb / Sump Inlet Computations														Runoff Intercepted					
Inlet Structure No.	Inlet Type	Length (ft)	Drainage Area (ac)	C	CA	Sum CA	I (in/hr)	Q, increm (cfs)	Q, carryover (cfs)	Qt, gutter (cfs)	S, gutter (ft/ft)	Sx, cross slope (ft/ft)	T, spread (ft)	W (ft)	W/T	Sw (ft/ft)	Sw/Sx	Eo	a (in)	Sw = a/(12W)	Se (ft/ft) = Sx + S'wEo	Lt (ft)	P, eff length (ft)	L/Lt	d (ft)	E	h (ft)	Q intercepted	d/h	Qb, carryover (cfs)	d, sump (ft)	T, spread at sag (ft)	Remarks
247	TYPE E	6	0.19	0.81	0.15	--	4.00	0.61	0.00	0.61	0.02	0.02	2.31	2.00	0.87	0.08	4.17	1.00	3.52	0.15	0.17	5.66	--	1.06	0.17	1.00	0.46	0.61	0.38	0.00	--	--	
246	TYPE E	6	0.14	0.86	0.12	--	4.00	0.48	0.00	0.48	0.02	0.02	1.89	2.00	1.06	0.08	4.17	1.00	3.52	0.15	0.17	5.11	--	1.17	0.16	1.00	0.46	0.48	0.34	0.00	--	--	
244A	TYPE E	6	0.19	0.81	0.15	--	4.00	0.61	0.00	0.61	0.02	0.02	2.24	2.00	0.89	0.08	4.17	1.00	3.52	0.15	0.17	5.73	--	1.05	0.17	1.00	0.46	0.61	0.37	0.00	--	--	
244	TYPE E	6	0.20	0.78	0.16	--	4.00	0.62	0.00	0.62	0.02	0.02	2.37	2.00	0.84	0.08	4.17	1.00	3.52	0.15	0.17	5.71	--	1.05	0.17	1.00	0.46	0.62	0.38	0.00	--	--	
243	TYPE E	8	0.42	0.73	0.31	--	4.00	1.22	0.00	1.22	0.02	0.02	4.52	2.00	0.44	0.08	4.17	0.92	3.52	0.15	0.16	8.01	--	1.00	0.22	1.00	0.46	1.22	0.47	0.00	--	--	
242	TYPE E	8	0.42	0.73	0.31	--	4.00	1.22	0.00	1.22	0.02	0.02	4.52	2.00	0.44	0.08	4.17	0.92	3.52	0.15	0.16	8.01	--	1.00	0.22	1.00	0.46	1.22	0.47	0.00	--	--	
239B	TYPE E	10	0.75	0.80	0.60	--	4.00	2.40	0.00	2.40	0.01	0.02	8.03	2.00	0.25	0.08	4.17	0.69	3.52	0.15	0.12	10.41	--	0.96	0.29	1.00	0.46	2.39	0.63	0.01	--	--	
239A	TYPE E	6	0.18	0.80	0.14	--	4.00	0.58	0.00	0.58	0.02	0.02	2.19	2.00	0.91	0.08	4.17	1.00	3.52	0.15	0.17	5.44	--	1.10	0.17	1.00	0.46	0.58	0.37	0.00	--	--	
239	TYPE E	6	0.27	0.70	0.19	--	4.00	0.76	0.00	0.76	0.02	0.02	2.99	2.00	0.67	0.08	4.17	0.99	3.52	0.15	0.17	6.22	--	0.97	0.19	1.00	0.46	0.75	0.41	0.00	--	--	
238	TYPE E	8	0.33	0.75	0.25	--	4.00	1.00	0.00	1.00	0.03	0.02	3.50	2.00	0.57	0.08	4.17	0.97	3.52	0.15	0.16	7.57	--	1.06	0.20	1.00	0.46	1.00	0.43	0.00	--	--	
237	TYPE E	8	0.36	0.75	0.27	--	4.00	1.08	0.00	1.08	0.03	0.02	3.83	2.00	0.52	0.08	4.17	0.96	3.52	0.15	0.16	7.81	--	1.02	0.20	1.00	0.46	1.08	0.44	0.00	--	--	
234B	TYPE E	10	0.75	0.80	0.60	--	4.00	2.40	0.00	2.40	0.01	0.02	7.89	2.00	0.25	0.08	4.17	0.70	3.52	0.15	0.12	10.57	--	0.95	0.28	0.99	0.46	2.39	0.62	0.01	--	--	
234A	TYPE E	6	0.22	0.82	0.18	--	4.00	0.72	0.01	0.73	0.01	0.02	4.01	2.00	0.50	0.08	4.17	0.95	3.52	0.15	0.16	5.08	--	1.18	0.21	1.00	0.46	0.73	0.45	0.00	--	--	
234	TYPE E	6	0.30	0.74	0.22	--	4.00	0.89	0.00	0.89	0.01	0.02	4.54	2.00	0.44	0.08	4.17	0.92	3.52	0.15	0.15	5.77	--	1.04	0.22	1.00	0.46	0.89	0.47	0.00	--	--	
233	TYPE E	12	0.91	0.75	0.69	--	4.00	2.75	0.00	2.75	0.02	0.02	7.36	2.00	0.27	0.08	4.17	0.73	3.52	0.15	0.13	12.84	--	0.93	0.27	0.99	0.46	2.73	0.60	0.02	--	--	
232	TYPE E	12	0.74	0.74	0.55	--	4.00	2.18	0.00	2.18	0.03	0.02	6.27	2.00	0.32	0.08	4.17	0.80	3.52	0.15	0.14	11.50	--	1.04	0.25	1.00	0.46	2.18	0.55	0.00	--	--	
261	TYPE E	6	0.22	0.79	0.17	--	4.00	0.70	0.00	0.70	0.02	0.02	3.14	2.00	0.64	0.08	4.17	0.99	3.52	0.15	0.16	5.57	--	1.08	0.19	1.00	0.46	0.70	0.41	0.00	--	--	
262	TYPE E	8	0.34	0.72	0.25	--	4.00	0.98	0.00	0.98	0.02	0.02	4.11	2.00	0.49	0.08	4.17	0.94	3.52	0.15	0.16	6.81	--	1.17	0.21	1.00	0.46	0.98	0.46	0.00	--	--	
263	TYPE E	8	0.32	0.75	0.24	--	4.00	0.96	0.00	0.96	0.02	0.02	4.02	2.00	0.50	0.08	4.17	0.95	3.52	0.15	0.16	6.72	--	1.19	0.21	1.00	0.46	0.96	0.45	0.00	--	--	
223	TYPE E	10	0.53	0.78	0.41	--	4.00	1.64	0.00	1.64	0.02	0.02	5.78	2.00	0.35	0.08	4.17	0.84	3.52	0.15	0.14	9.14	--	1.09	0.24	1.00	0.46	1.64	0.53	0.00	--	--	
223A	TYPE E	8	0.38	0.73	0.28	--	4.00	1.10	0.00	1.10	0.02	0.02	4.41	2.00	0.45	0.08	4.17	0.93	3.52	0.15	0.16	7.33	--	1.09	0.21	1.00	0.46	1.10	0.47	0.00	--	--	
226	TYPE E SAG	10	0.32	0.83	0.26	--	4.00	1.06	0.01	1.07	0.00	0.02	--	2.00	--	0.08	4.17	--	--	--	--	--	13.60	--	0.33	--	0.46	1.07	0.72	0.00	0.11	1.30	SAG
226	TYPE E SAG	10	0.32	0.83	0.26	--	4.00	1.06	0.01	1.07	0.00	0.02	10.08	2.00	0.20	0.08	4.17	--	--	--	--	--	--	--	0.33	--	--	--	--	--	--	--	--	LEFT
226	TYPE E SAG	10	0.32	0.83	0.26	--	4.00	1.06	0.01	1.07	0.00	0.02	10.08	2.00	0.20	0.08	4.17	--	--	--	--	--	--	--	0.33	--	--	--	--	--	--	--	--	RIGHT
225	TYPE E SAG	10	0.33	0.83	0.27	--	4.00	1.09	0.02	1.11	0.00	0.02	--	2.00	--	0.08	4.17	--	--	--	--	--	13.60	--	0.33	--	0.46	1.11	0.72	0.00	0.11	1.33	SAG
225	TYPE E SAG	10	0.33	0.83	0.27	--	4.00	1.09	0.02	1.11	0.00	0.02	10.26	2.00	0.19	0.08	4.17	--	--	--	--	--	--	--	0.33	--	--	--	--	--	--	--	--	LEFT
225	TYPE E SAG	10	0.33	0.83	0.27	--	4.00	1.09	0.02	1.11	0.00	0.02	10.26	2.00	0.19	0.08	4.17	--	--	--	--	--	--	--	0.33	--	--	--	--	--	--	--	--	RIGHT
210	TYPE E	10	0.58	0.73	0.43	--	4.00	1.70	0.00	1.70	0.03	0.02	5.45	2.00	0.37	0.08	4.17	0.86	3.52	0.15	0.15	9.89	--	1.01	0.24	1.00	0.46	1.70	0.51	0.00	--	--	
209	TYPE E	10	0.52	0.73	0.38	--	4.00	1.51	0.00	1.51	0.03	0.02	5.03	2.00	0.40	0.08	4.17	0.89	3.52	0.15	0.15	9.25	--	1.08	0.23	1.00	0.46	1.51	0.50	0.00	--	--	
208A	TYPE E	8	0.52	0.74	0.38	--	4.00	1.54	0.00	1.54	0.01	0.02	6.18	2.00	0.32	0.08	4.17	0.81	3.52	0.15	0.14	8.12	--	0.99	0.25	1.00	0.46	1.54	0.55	0.00	--	--	
208	TYPE E	8	0.56	0.77	0.43	--	4.00	1.73	0.00	1.73	0.01	0.02	6.62	2.00	0.30	0.08	4.17	0.78	3.52	0.15	0.13	8.70	--	0.92	0.26	0.99	0.46	1.71	0.57	0.02	--	--	
213	TYPE E	8	0.43	0.59	0.26	--	4.00	1.02	0.00	1.02	0.02	0.02	4.06	2.00	0.49	0.08	4.17	0.95	3.52	0.15	0.16	7.11	--	1.12	0.21	1.00	0.46	1.02	0.45	0.00	--	--	
212	TYPE E	8	0.44	0.72	0.32	--	4.00	1.27	0.00	1.27	0.02	0.02	4.81	2.00	0.42	0.08	4.17	0.90	3.52	0.15	0.15	8.00	--	1.00	0.22	1.00	0.46	1.27	0.49	0.00	--	--	
211A	TYPE E	10	0.93	0.48	0.45	--	4.00	1.79	0.00	1.79	0.02	0.02	6.00	2.00	0.33	0.08	4.17	0.82	3.52	0.15	0.14	9.69	--	1.03	0.25	1.00	0.46	1.79	0.54	0.00	--	--	
211	TYPE E	6	0.46	0.73	0.34	--	4.00	1.34	0.00	1.34	0.02	0.02	4.99	2.00	0.40	0.08	4.17	0.89	3.52	0.15	0.15	8.25	--	0.73	0.23	0.90	0.46	1.21	0.49	0.13	--	--	
217	TYPE E	8	0.40	0.47	0.19	--	4.00	0.74	0.00	0.74	0.01	0.02	4.42	2.00	0.45	0.08	4.17	0.93	3.52	0.15	0.16	4.89	--	1.64	0.22	1.00	0.46	0.74	0.47	0.00	--	--	
216	TYPE E	8	0.36	0.73	0.26	--	4.00	1.06	0.00	1.06	0.04	0.02	3.19	2.00	0.63	0.08	4.17	0.98	3.52	0.15	0.16	8.45	--	0.95	0.19	0.99	0.46	1.05	0.42	0.01	--	--	
215	TYPE E	8	0.48	0.74	0.35	--	4.00	1.42	0.00	1.42	0.04	0.02	4.16	2.00	0.48	0.08	4.17	0.94	3.52	0.15	0.16	9.79	--	0.82	0.21	0.95	0.46	1.35	0.46	0.07	--	--	
214	TYPE E	6	0.07	0.64	0.05	--	4.00	0.18	0.00	0.18	0.02	0.02	1.35	2.00	1.48	0.08	4.17	1.00	3.52	0.15	0.17	3.24	--	1.85	0.11	1.00	0.46	0.18	0.25	0.00	--	--	
203	TYPE E	8	0.31	0.74	0.23	--	4.00	0.92	0.00	0.92	0.04	0.02	2.74	2.00	0.73	0.08	4.17	0.99	3.52	0.15	0.17	7.93	--	1.01	0.18	1.00	0.46	0.92	0.40	0.00	--	--	
202	TYPE E	6	0.09	0.70	0.06	--	4.00	0.25	0.00	0.25	0.02	0.02	1.53	2.00	1.31	0.08	4.17	1.00	3.52	0.15	0.17	3.73	--	1.61	0.13	1.00	0.46	0.25	0.28	0.00	--	--	
200B	TYPE E	8	0.56	0.76	0.43	--	4.00	1.70	0.00	1.70	0.02	0.02	6.44	2.00	0.31	0.08	4.17	0.79	3.52	0.15	0.14	8.75	--	0.91	0.26	0.99	0.46	1.68	0.56	0.02	--	--	
200A	TYPE E	6	0.07	0.64	0.05	--	4.00	0.18	0.00	0.18	0.03	0.02	1.22	2.00	1.65	0.08	4.17	1.00	3.52	0.15	0.17	3.82	--	1.57	0.10	1.00	0.46	0.18	0.22	0.00	--	--	
200	TYPE E	6	0.07	0.64	0.05	--	4.00	0.18	0.00	0.18	0.03	0.02	1.22	2.00	1.65	0.08	4.17	1.00	3.52	0.15	0.17	3.82	--	1.57	0.10	1.00	0.46	0.18	0.22	0.00	--	--	
93	TYPE E	6	0.41	0.75	0.31	--	4.00	1.23	0.00	1.23	0.02	0.02	4.77	2.00	0.42	0.08	4.17	0.90	3.52	0.15	0.15	7.77	--	0.77	0.22	0.93	0.46	1.14	0.48	0.09	--	--	
92	TYPE E	6	0.37	0.75	0.28	--	4.00	1.11	0.00	1.11	0.02	0.02	4.42	2.00	0.45	0.08	4.17	0.93	3.52	0.15	0.16	7.35	--	0.82	0.22	0.95	0.46	1.06	0.47	0.05	--	--	
93A	TYPE E SAG	6	0.57	0.75	0.43	--	4.00	1.72	0.11	1.82	0.00	0.02	--	2.00	--	0.08	4.17	--	--	--	--	--	9.60	--	0.38	--	0.46	1.82	0.83	0.00	0.22	4.50	SAG
93A	TYPE E SAG	6	0.53	0.75	0.40	--	4.00	1.60	0.11	1.70	0.00	0.02	12.38	2.00	0.16	0.08	4.17	--	--	--	--	--	--	--	0.37	--	--	--	--	--	--	--	--	LEFT
93A	TYPE E SAG	6	0.04	0.75	0.03	--	4.00	0.12	0.11	0.23	0.00	0.02	4.12	2.00	0.49	0.08	4.17	--	--	--	--	--	--	--	0.21	--	--	--	--	--	--	--	--	RIGHT
93B	TYPE E SAG	6	0.57	0.74	0.42	--	4.00	1.69	0.05	1.74	0.00	0.02	--	2.00	--	0.08	4.17	--	--	--	--	--	9.60	--	0.38	--	0.46	1.74	0.82	0.00	0.21	4.19	SAG
93B	TYPE E SAG	6	0.07	0.74	0.05	--	4.00	0.21	0.05	0.26	0.00	0.02	4.59	2.00	0.44	0.08	4.17	--	--	--	--	--	--	--	0.22	--	--	--	--	--	--	--	--	LEFT
93B	TYPE E SAG	6	0.50	0.74	0.37	--	4.00	1.48	0.05	1.54	0.00	0.02	11.85	2.00	0.17	0.08	4.17	--	--	--	--	--	--	--	0.36	--	--	--	--	--	--	--	--	RIGHT
106	TYPE E SAG	6	0.11	0.69	0.08	--	4.00	0.30	0.00	0.30	0.02	0.02	1.62	2.00	1.23	0.08	4.17	1.00	3.52	0.15	0.17	4.10	--	1.47	0.14	1.00	0.46	0.30	0.30	0.00	--	--	
106A	TYPE E SAG	6	0.36	0.60	0.22	--	4.00	0.86	0.00	0.86	0.02	0.02	3.59	2.00	0.56	0.08	4.17	0.97	3.52	0.15	0.16	6.46	--	0.93	0.20	0.99	0.46	0.86	0.43	0.01	--	--	
107	TYPE E SAG	6	0.09	0.77	0.07	--	4.00	0.28	0.00	0.28	0.00	0.02	--	2.00	--	0.08	4.17	--	--	--	--	--	9.60	--	0.22	--	0.46	0.28	0.49	0.00	0.06	0.74	SAG
107	TYPE E SAG	6	0.03	0.77	0.02	--	4.00	0.09	0.00	0.09	0.00	0.02	1.82	2.00	1.10	0.08	4.17	--	--	--	--	--	--	--	0.15	--	--	--	--	--	--	--	--	LEFT
107	TYPE E SAG	6	0.06	0.77	0.05	--	4.00	0.18	0.00	0.18	0.00	0.02	3.42	2.00	0.59	0.08	4.17	--	--	--	--	--	--	--	0.20	--	--	--	--	--	--	--	--	RIGHT
107A	TYPE E SAG	6	0.85	0.76	0.65	--	4.00	2.58	0.01	2.59	0.00	0.02	--	2.00	--	0.08	4.17	--	--	--	--	--	9.60	--	0.42	--	0.46	2.59	0.92	0.00	0.27	7.36	SAG
107A	TYPE E SAG	6	0.71	0.76	0.54	--	4.00	2.16	0.01	2.16	0.00	0.02	13.70	2.00	0.15	0.08	4.17	--	--	--	--	--	--	--	0.40	--	--	--	--	--	--	--	--	LEFT
107A	TYPE E SAG	6	0.14	0.76	0.11	--	4.00	0.42	0.01	0.43	0.00	0.02	6.37	2.00	0.31	0.08	4.17	--	--	--	--	--	--	--	0.25	--	--	--	--	--	--	--	--	RIGHT
105B	TYPE E	6	0.22	0.75	0.17	--	4.00	0.66	0.00	0.66	0.02	0.02	2.70	2.00	0.74	0.08	4.17	1.00	3.52	0.15	0.17	5.69	--	1.05	0.18	1.00	0.46	0.66	0.39	0.00	--	--	
105A	TYPE E	6	0.23	0.75	0.17	--	4.00	0.69	0.00	0.69	0.02	0.02	2.85	2.00	0.70	0.08	4.17	0.99	3.52	0.15	0.17	5.80	--	1.03	0.18	1.00	0.46	0.69	0.40	0.00	--	--	
104A	TYPE E	6	0.53	0.75	0.40	--	4.00	1.59	0.00	1.59	0.02	0.02	5.67	2.00	0.35	0.08	4.17	0.84	3.52	0.15	0.14	8.96	--	0.67	0.24	0.86	0.46	1.37	0.52	0.22	--	--	
104	TYPE E	6	0.20	0.75	0.15	--	4.00	0.60	0.00	0.60	0.02	0.02	2.39	2.00	0.84	0.08	4.17	1.00	3.52	0.15	0.17	5.45	--	1.10	0.17	1.00	0.46	0.60	0.38	0.00	--	--	
117	TYPE E	6	0.15	0.75	0.11	--	4.00	0.45	0.00	0.45	0.02	0.02	1.88	2.00	1.06	0.08	4.17	1.00	3.52	0.15	0.17	4.83	--	1.24	0.16	1.00	0.46	0.45	0.34	0.00	--	--	
116	TYPE E	6	0.24	0.75	0.18	--	4.00	0.72	0.00	0.72	0.02	0.02	2.99	2.00	0.67	0.08	4.17	0.99	3.52	0.15	0.17	5.92	--	1.01	0.19	1.00	0.46	0.72	0.41	0.00	--	--	
115	TYPE E	6	0.38	0.75	0.29	--	4.00	1.14	0.00	1.14	0.01	0.02	5.72	2.00	0.35	0.08	4.17	0.84	3.52	0.15	0.14	6.34	--	0.95	0.24	0.99	0.46	1.13	0.53	0.01	--	--	
115A	TYPE E	6	0.13	0.75	0.10	--	4.00	0.39	0.00	0.39	0.01	0.02	2.13	2.00	0.94	0.08	4.17	1.00	3.52	0.15	0.17	3.70	--	1.62	0.17	1.00	0.46	0.39	0.37	0.00	--	--	
112A	TYPE E	6	0.18	0.75	0.14	--	4.00	0.54	0.00	0.54	0.01	0.02	2.63	2.00	0.76	0.08	4.17	1.00	3.52	0.15	0.17	4.69	--	1.28	0.18	1.00	0.46	0.54	0.39	0.00	--	--	
111	TYPE E	6	0.25	0.75	0.19	--	4.00	0.75	0.00	0.75	0.04	0.02	2.00	2.00	1.00	0.08	4.17	1.00	3.52	0.15	0.17	7.37	--	0.81	0.17	0.95	0.46	0.71	0.36	0.04	--	--	
112	TYPE E	6	0.41	0.75	0.31	--	4.00	1.23	0.04	1.27	0.01	0.02	5.49	2.00	0.36	0.08	4.17	0.86	3.52	0.15	0.15	7.27	--	0.83	0.24	0.96	0.46	1.21	0.52	0.05	--	--	
103	TYPE E	6	0.14	0.75	0.11	--	4.00	0.42	0.00	0.42	0.04	0.02	1.61	2.00	1.24	0.08	4.17	1.00	3.52	0.15	0.17	5.78	--	1.04	0.13	1.00	0.46	0.42	0.29	0.00	--	--	

REVISIONS	DATE
CITY OF RANSON, CTUB, AND WVAW COMMENTS	6/12/25
CITY OF RANSON, CTUB, AND WVAW COMMENTS	7/28/25

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RICHARD J. DIEHL — REGISTERED — 20884 — STATE OF WEST VIRGINIA — PROFESSIONAL ENGINEER — 4/16/25

STORM SEWER COMPUTATIONS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 35 OF 71

STORM SEWER DESIGN COMPUTATIONS

				CA						Pipe							
FR. Point	To Point	Drain Area "A" (acres)	Runoff Coeff., C	Increment	Accumulated	Inlet Time (min)	Rainfall (in/hr)	Runoff, Q (cfs)	Upper End Inv	Lower End Inv	Pipe Length (ft)	Slope (ft/ft)	Dia (in)	Capacity (cfs)	Velocity Full Flow (fps)	Velocity Partial Flow (fps)	Flow Time (sec.)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
247	246	0.19	0.81	0.15	0.15	5.0	6.53	0.98	563.47	563.04	43.42	0.0099	15	3.48	2.8	2.4	17.8	
246	245	0.14	0.86	0.12	0.27	5.3	6.44	1.74	562.94	560.18	180.81	0.0153	15	4.32	3.5	3.3	54.1	
245A	245	0.82	0.41	0.34	0.34	5.0	6.53	2.22	563.40	560.18	35.16	0.0916	15	10.58	8.7	6.8	5.1	
245	244	0.00	0.00	0.00	0.61	6.2	6.18	3.77	560.08	557.51	106.36	0.0242	15	5.43	4.4	4.8	22.2	
244A	244	0.19	0.81	0.15	0.15	5.0	6.53	0.98	557.49	557.23	43.23	0.0060	15	2.71	2.2	2.0	21.2	
244	243	0.20	0.78	0.16	0.92	6.6	6.08	5.59	557.41	557.13	27.79	0.0101		8.61	3.6	3.8	7.3	
243	242	0.42	0.73	0.31	1.23	6.7	6.04	7.43	557.13	556.80	33.28	0.0099		8.55	3.6	4.0	8.3	
242	241	0.42	0.73	0.31	1.54	6.8	6.00	9.24	556.70	556.40	29.54	0.0102	24	12.35	3.9	4.3	6.8	
241	240	0.00	0.00	0.00	1.54	6.9	5.97	9.24	556.30	555.30	100.27	0.0100	24	12.24	3.9	4.3	23.4	
240A	240	0.93	0.43	0.40	0.40	5.0	6.53	2.61	557.93	555.30	19.00	0.1384	15	13.00	10.6	8.3	2.3	
240	239	0.00	0.00	0.00	1.94	7.3	5.85	11.36	555.20	552.63	95.26	0.0270	24	20.13	6.4	6.6	14.4	
239B	239A	0.75	0.80	0.60	0.60	5.0	6.53	3.92	552.36	552.00	35.78	0.0101	18	5.70	3.2	3.5	10.3	
239A	239	0.18	0.80	0.14	0.74	5.2	6.48	4.80	551.90	551.64	43.24	0.0060		6.65	2.8	3.0	14.3	
239	237	0.27	0.70	0.19	2.87	7.6	5.78	16.60	551.04	550.87	27.79	0.0061	30	17.40	3.6	3.3	8.5	
238	237	0.33	0.75	0.25	0.25	7.7	5.74	1.44	550.77	550.52	41.30	0.0061		22.32	3.8	2.1	19.6	
237	236	0.36	0.75	0.27	3.39	8.0	5.65	19.15	550.42	550.27	24.31	0.0062		22.53	3.8	4.3	5.7	
236	235	0.00	0.00	0.00	3.39	8.1	5.62	19.15	550.17	549.55	102.91	0.0060		22.27	3.8	4.2	24.4	
235A	235	0.90	0.43	0.39	0.39	5.0	6.53	2.55	553.03	551.04	22.88	0.0870	15	10.31	8.4	7.0	3.3	
235	234	0.00	0.00	0.00	3.78	8.5	5.50	20.80	549.45	548.84	102.01	0.0060		22.18	3.7	4.3	24.0	
234A	234B	0.22	0.82	0.18	0.18	5.0	6.53	1.18	549.78	549.63	24.79	0.0061	15	2.72	2.2	2.1	11.6	
234B	231B	0.75	0.80	0.60	0.78	5.2	6.47	5.05	549.53	549.25	47.42	0.0059	15	6.59	2.8	3.0	15.7	
234	232	0.30	0.74	0.22	4.00	5.0	6.53	26.12	548.74	548.57	28.32	0.0060	42	42.32	4.4	4.6	6.1	
233	232	0.91	0.75	0.69	0.69	5.1	6.50	4.49	548.47	548.21	43.74	0.0059	42	42.11	4.4	2.9	15.3	
232	231	0.74	0.74	0.55	5.24	5.4	6.43	33.67	548.11	547.89	36.87	0.0060	42	42.19	4.4	4.9	7.6	
231B	226	0.75	0.80	0.60	1.38	5.0	6.53	9.01	549.15	548.07	179.38	0.0060	24	9.51	3.0	3.5	52.0	
231	230	0.00	0.00	0.00	5.24	5.0	6.53	34.22	547.79	547.14	107.86	0.0060	42	42.40	4.4	4.9	22.0	Tc applied to DA-7D
226	225	0.32	0.83	0.26	1.64	5.0	6.53	10.71	547.97	547.71	44.00	0.0059	30	17.10	3.5	3.7	11.9	
225	224	0.33	0.83	0.27	1.91	5.2	6.47	12.36	547.61	547.45	25.63	0.0062	30	17.57	3.6	3.9	6.6	
223A	223	0.38	0.73	0.28	0.28	5.0	6.53	1.83	548.75	548.51	40.58	0.0059	15	2.69	2.2	2.4	17.2	
223	222	0.53	0.78	0.41	0.69	5.3	6.45	4.45	548.41	548.15	42.81	0.0061	24	9.55	3.0	3.0	14.3	
222	221	0.00	0.00	0.00	0.69	5.5	6.38	4.45	548.05	547.50	91.96	0.0060	24	9.48	3.0	3.0	30.9	
263	262	0.32	0.75	0.24	0.24	5.0	6.53	1.57	554.99	554.75	40.05	0.0060	15	2.71	2.2	2.3	17.5	
262	261	0.34	0.72	0.25	0.49	5.3	6.45	3.16	554.65	553.99	109.98	0.0060	18	4.41	2.5	2.7	40.5	
261A	261	0.83	0.42	0.35	0.35	5.0	6.53	2.29	557.73	553.99	61.34	0.0610	15	8.63	7.1	6.0	10.3	
261	260	0.22	0.79	0.17	1.01	6.0	6.25	6.31	553.89	553.62	44.23	0.0061	24	9.58	3.1	3.3	13.6	
210A	210	0.85	0.46	0.39	0.39	5.0	6.53	2.55	559.85	558.88	117.28	0.0083	18	5.17	2.9	2.9	40.1	
210	209	0.58	0.73	0.43	0.82	5.7	6.34	5.20	558.78	558.58	33.22	0.0060	24	9.51	3.0	3.1	10.7	
209	208	0.52	0.73	0.38	1.20	5.8	6.28	7.54	558.48	556.58	299.13	0.0064	24	9.77	3.1	3.4	87.0	
208A	207	0.52	0.74	0.38	0.38	5.0	6.53	2.48	556.84	556.58	42.56	0.0061	18	4.44	2.5	2.6	16.4	
208	207	0.56	0.77	0.43	1.63	5.0	6.53	10.64	556.48	556.28	29.13	0.0069	30	18.43	3.8	3.9	7.5	
207	206	0.00	0.00	0.00	2.01	5.3	6.45	12.97	554.52	554.00	87.39	0.0060	30	17.16	3.5	3.8	22.7	
206A	206	0.99	0.48	0.48	0.48	5.0	6.53	3.13	555.00	554.00	16.41	0.0609	15	8.63	7.1	6.5	2.5	
206	205	0.00	0.00	0.00	2.49	5.7	6.34	15.79	553.90	553.46	88.05	0.0050	36	25.58	3.6	3.8	23.1	
213	212	0.43	0.59	0.26	0.26	6.0	6.23	1.62	556.09	555.76	33.25	0.0099	15	3.48	2.9	2.8	11.9	
212	211	0.44	0.72	0.32	0.58	6.2	6.17	3.58	555.66	553.73	321.99	0.0060	18	4.40	2.5	2.8	115.7	
211A	211	0.93	0.48	0.45	0.45	5.0	6.53	2.94	553.94	553.73	34.26	0.0061	18	4.45	2.5	2.7	12.7	
211	205	0.46	0.73	0.34	1.37	8.2	5.61	7.69	553.63	553.46	27.59	0.0062	24	9.62	3.1	3.4	8.1	
205	204	0.00	0.00	0.00	3.86	8.3	5.57	21.51	553.36	553.09	44.59	0.0061	36	28.16	4.0	4.4	10.2	
204	203	0.00	0.00	0.00	3.86	8.5	5.52	21.51	552.99	552.37	103.75	0.0060	36	28.07	4.0	4.4	23.7	
203	202	0.31	0.74	0.23	4.09	8.9	5.41	22.13	552.27	551.79	79.23	0.0061	36	28.17	4.0	4.4	17.9	
216	215	0.36	0.73	0.26	0.45	5.0	6.53	2.94	552.41	552.14	33.27	0.0081	18	5.12	2.9	3.0	11.1	
215	214	0.48	0.74	0.35	0.80	5.2	6.48	5.18	552.11	551.95	27.43	0.0058	21	6.55	2.7	3.0	9.1	
214	202	0.07	0.64	0.05	0.85	5.3	6.43	5.47	552.04	551.79	41.42	0.0060	21	6.67	2.8	3.1	13.4	
202	201	0.09	0.70	0.06	5.00	9.2	5.32	26.62	551.69	551.09	99.73	0.0060	36	28.07	4.0	4.5	22.0	
201A	201	1.09	0.44	0.48	0.48	9.5	5.22	2.50	556.78	551.09	57.27	0.0994	15	11.02	9.0	7.3	7.9	

STORM SEWER DESIGN COMPUTATIONS

				CA						Pipe							
FR. Point	To Point	Drain Area "A" (acres)	Runoff Coeff., C	Increment	Accumulated	Inlet Time (min)	Rainfall (in/hr)	Runoff, Q (cfs)	Upper End Inv	Lower End Inv	Pipe Length (ft)	Slope (ft/ft)	Dia (in)	Capacity (cfs)	Velocity Full Flow (fps)	Velocity Partial Flow (fps)	Flow Time (sec.)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
201	200	0.00	0.00	0.00	5.48	9.7	5.18	28.38	550.99	550.25	92.34	0.0080	36	32.40	4.6	5.2	17.8	
200B	200A	0.56	0.76	0.43	0.43	5.0	6.53	2.81	550.76	550.49	27.40	0.0099	15	3.47	2.8	3.2	8.7	
200A	200	0.07	0.64	0.05	0.48	5.1	6.49	3.11	550.49	550.25	40.65	0.0059	18	4.37	2.5	2.7	15.1	
200	107	0.07	0.64	0.05	6.01	10.0	5.09	30.61	550.15	549.60	107.99	0.0051	42	38.98	4.1	4.5	24.1	
107A	107	0.85	0.76	0.65	0.65	5.0	6.53	4.24	550.27	549.65	41.20	0.0150	15	4.29	3.5	4.0	10.3	
107	106	0.09	0.77	0.07	6.73	10.4	5.02	33.75	549.55	548.80	73.51	0.0102	42	55.17	5.7	6.0	12.2	
106B	106A	0.82	0.41	0.34	0.34	5.0	6.53	2.22	551.21	550.88	40.93	0.0081	15	3.14	2.6	2.8	14.7	
106A	106	0.36	0.60	0.22	0.56	5.2	6.46	3.62	550.78	550.38	40.11	0.0100	15	3.49	2.9	3.2	12.4	
106	105	0.11	0.69	0.08	7.37	10.6	4.98	36.69	548.70	547.96	122.00	0.0061	42	42.54	4.4	5.0	24.5	
105B	105A	0.22	0.75	0.17	0.17	11.0	4.91	0.83	550.75	550.46	42.02	0.0069	15	2.90	2.4	2.0	20.5	
105A	105	0.23	0.75	0.17	0.34	11.3	4.84	1.65	550.36	549.31	150.45	0.0070	15	2.92	2.4	2.5	61.2	
105	104	0.00	0.00	0.00	7.71	12.3	4.66	36.69	547.86	546.88	164.00	0.0060	42	42.22	4.4	4.9	33.2	
104A	104	0.53	0.75	0.40	0.40	5.0	6.53	2.61	554.52	553.72	40.02	0.0200	24	17.33	5.5	4.0	10.1	
104	103	0.20	0.75	0.15	8.26	12.9	4.56	37.67	546.78	544.57	367.80	0.0060	42	42.34	4.4	5.0	73.9	
117	116	0.15	0.75	0.11	0.11	5.0	6.53	0.72	546.40	546.14	42.59	0.0061	15	2.73	2.2	1.9	22.6	
116	115	0.24	0.75	0.18	0.29	5.4	6.42	1.86	546.04	545.91	21.00	0.0062	15	2.75	2.3	2.4	8.7	
115A	115	0.13	0.75	0.10	0.10	5.0	6.53	0.65	546.50	545.91	32.00	0.0184	15	4.75	3.9	2.7	11.8	
115	114	0.38	0.75	0.29	0.68	5.5	6.38	4.34	545.81	544.58	204.86	0.0060	18	4.41	2.5	2.9	71.8	
114A	114	1.65	0.44	0.72	0.72	5.0	6.53	4.70	545.17	544.58	118.22	0.0050	24	8.66	2.8	2.8	41.9	
114	113	0.00	0.00	0.00	1.40	6.7	6.03	8.44	544.48	543.60	146.58	0.0060	24	9.50	3.0	3.4	42.8	
113	112	0.00	0.00	0.00	1.40	7.4	5.82	8.44	543.50	542.86	106.39	0.0060	24	9.51	3.0	3.4	31.1	
112A	112	0.18	0.75	0.14	0.14	5.0	6.53	0.91	545.18	544.85	32.62	0.0101	15	3.52	2.9	2.4	13.5	
112	111	0.41	0.75	0.31	1.85	8.0	5.67	10.50	542.76	542.59	28.59	0.0059	24	9.45	3.0	2.8	10.2	
111	103	0.25	0.75	0.19	2.04	8.1	5.63	11.48	542.49	542.33	32.01	0.0050		11.87	3.0	3.4	9.4	
103	102	0.14	0.75	0.11	10.41	14.1	4.34	45.17	542.20	541.94	32.31	0.0080	48	69.98	5.6	5.9	5.5	
102	101	0.00	0.00	0.00	10.41	14.2	4.32	45.17	541.84	541.58	33.06	0.0079	48	69.19	5.5	5.9	5.6	
101	100	0.00	0.00	0.00	10.41	14.3	4.31	45.17	541.48	540.00	207.02	0.0071	48	65.96	5.3	5.7	38.6	Tc applied to DA-1
99A	99	1.86	0.45	0.84	0.84	5.0	6.53	5.49	550.57	550.03	108.37	0.0050	24	11.85	3.0	2.9	37.0	
99	98	1.01	0.73	0.74	1.58	5.6	6.35	10.03	549.93	549.72	41.26	0.0051	24	11.98	3.0	3.4	12.2	
98	P5	0.73	0.65	0.48	3.45	6.2	6.18	21.31	549.62	549.50	23.74	0.0051	30	15.81	3.2	3.1	7.6	
97A	97	1.38	0.30	0.41	0.41	5.0	6.53	2.68	550.95	548.62	25.49	0.0914	18	17.19	9.8	7.1	3.6	
97	96	0.00	0.00	0.00	0.00	5.0	6.53	0.18	548.62	548.44	35.94	0.0050	18	4.02	2.3	1.1	31.5	0.175 from Pond #5 Peak Discharge 10yr
96	95	0.55	0.90	0.50	0.50	5.5	6.38	3.19	548.34	548.14	40.63	0.0050	30	15.80	3.2	2.5	16.1	
95	94	0.89	0.75	0.67	1.17	5.8	6.30	7.37	548.04	547.45	117.29	0.0050	30	15.78	3.2	3.2	37.1	
94B	94	1.01	0.43	0.44	0.44	5.0	6.53	2.87	548.07	547.45	68.25	0.0091	15	3.33	2.7	3.1	22.3	
94A	94	0.91	0.44	0.40	0.40	5.0	6.53	2.61	548.00	547.45	60.00	0.0092	15	3.35	2.7	3.0	19.8	
94	93	0.00	0.00	0.00	2.01	6.4	6.12	12.30	547.35	546.35	117.96	0.0085	30	20.48	4.2	4.4	27.0	
93B	93A	0.57	0.74	0.42	0.42	5.0	6.53	2.74	546.88	546.64	39.97	0.0060	15	2.71	2.2	2.5	15.8	
93A	93	0.57	0.75	0.43	0.85	5.3	6.45	5.49	546.54	546.35	31.12	0.0061	15	2.73	2.2	2.1	14.6	
93	92	0.41	0.75	0.31	3.17	6.9	5.99	18.99	546.25	545.80	53.14	0.0085	30	20.47	4.2	4.7	11.2	
92	91	0.37	0.75	0.28	3.45	7.0	5.94	20.48	545.70	543.89	119.49	0.0151	30	27.38	5.6	6.1	19.5	
90B	91	0.94	0.42	0.39	0.39	5.0	6.53	2.55	546.29	544.50	65.03	0.0275	15	5.80	4.7	4.6	14.2	
91	90	0.66	0.42	0.28	4.12	7.4	5.84	24.07	543.79	542.31	97.19	0.0152	30	27.45	5.6	6.3	15.4	
90	89	0.37	0.75	0.28	4.40	7.6	5.77	25.38	542.21	541.84	24.32	0.0152	36	44.64	6.3	6.5	3.7	
89	88	0.69	0.75	0.52	4.92	7.7	5.75	28.29	541.74	541.49	42.00	0.0060	42	42.14	4.4	4.7	8.9	
88	87	0.74	0.75	0.56	5.48	7.8	5.71	31.27	541.39	540.66	120.97	0.0060	42	42.43	4.4	4.8	25.1	
87A	87	0.88	0.44	0.39	0.39	5.0	6.53	2.55	544.13	543.45	54.38	0.0125	15	3.91	3.2	3.4	16.0	
87	86	0.71	0.44	0.31	6.18	8.3	5.59	34.52	540.56	539.99	94.96	0.0060	42	42.32	4.4	4.9	19.4	
86	85	0.33	0.75	0.25	6.43	8.6	5.49	35.31	539.89	539.74	25.08	0.0060	42	42.24	4.4	4.9	5.1	
85	84	0.70	0.75	0.53	6.96	8.7	5.47	38.05	539.64	539.40	39.99	0.0060	42	42.31	4.4	5.0	8.0	
84B	84A	0.23	0.73	0.17	0.17	5.0	6.53	1.11	544.01	543.76	41.35	0.0060	15	2.72	2.2	2.1	19.6	
84A	84	0.23	0.73	0.17	0.34	5.3	6.44	2.19	543.66	542.49	194.32	0.0060	15	2.71	2.2	2.5	78.8	
84	83	0.68	0.75	0.51	7.81	8.8	5.43	42.39	539.30	538.61	114.18	0.0060	42	42.46	4.4	5.0	22.7	
83A	83	0.99	0.60	0.59	0.59	5.0	6.53	3.85	539.28	538.61	37.04	0.0181	15	4.70	3.8	4.3	8.6	
83B	83	0.74	0.60	0.44	0.44	5.0	6.53	2.87	539.18	538.61	30.46	0.0187	15	4.78	3.9	4.1	7.5	
83	82	0.00	0.00	0.00	8.84	9.2	5.32	47.01	538.51	537.80	118.83	0.0060	42	42.22	4.4	4.1	29.1	
82	81	1.03	0.75	0.77	9.61	9.7	5.18	49.76	537.70	537.50	34.00	0.0059	48	59.84	4.8	5.3	6.4	
81	80	0.92	0.75	0.69	10.30	9.8	5.15	53.01	537.40	536.60	133.29	0.0060	48	60.44	4.8	5.4	24.6	
173A	173	0.85	0.45	0.38	0.38	5.0	6.53	2.48	556.69	556.15	108.98	0.0050	18	4.00	2.3	2.4	45.6	
173	172	1.08	0.75	0.81	1.19	5.0	6.53	7.77	555.65	555.44	40.04	0.0052	24	8.88	2.8	3.2	12.5	
172	98	0.23	0.85	0.20	1.39	5.2	6.47	8.99	553.47	549.72	288.05	0.0130	24	13.99	4.5	4.7	60.8	
171	170	0.26	0.54	0.14	0.14	6.2	6.18	0.86	553.22	552.92	39.98	0.0075	24	10.62	3.4	2.0	19.6	

PIPE OUTLET PROTECTION

Outfall	10-Year Discharge (cfs)	10-Year Velocity (fps)	Outlet Size D_o (in)	Required			Provided			RipRap Class	Depth	D_{50}
				3*D_o (ft)	L_a (ft)	W (ft)	3*D_o (ft)	L_a (ft)	W (ft)			
P5	21.31	3.14	30	7.50	16.00	18.50	8.00	16.00	19.00	CLASS I	2.5	1.6
221	4.45	2.98	24	6.00	13.00	15.00	6.00	13.00	15.00	CLASS I	2.5	1.6
224	12.36	3.88	30	7.50	16.00	18.50	5.00	9.00	19.00	CLASS I	2.5	1.6
230	34.22	4.91	42	10.50	23.00	26.50	11.00	23.00	27.00	CLASS I	2.5	1.6
260	6.31	3.26	24	6.00	13.00	15.00	6.00	13.00	15.00	CLASS I	2.5	1.6
300	3.52	4.23	18	4.50	9.00	10.50	5.00	9.00	11.00	CLASS I	2.5	1.6

NOTE: Flows and Velocities are calculated using the Rational Method and Mannings Formula.

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. DYER REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

STORM SEWER COMPUTATIONS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 36 OF 71

HYDRAULIC GRADE LINE COMPUTATIONS

INLET NUMBER	OUTLET WATER SURFACE ELEV.	D_o	Q_o	L_o	S_{fo} (%)	H_f	JUNCTION LOSS V_o	H_b	Q_i	V_i	Q_iV_i	$V_i^2/2g$	H_j	ANGLE	H_{Δ}	H_k	1.3H_k	0.5H_k	FINAL H	INLET WATER SURFACE ELEVATION	RIM ELEV.
81	540.15	48	53.01	133.29	0.46%	0.62	4.8	0.09	49.8	4.8	237.1	0.35	0.12	0	0.00	0.21	–	0.11	0.72	540.87	545.16
82	540.87	48	49.76	34.00	0.41%	0.14	4.8	0.09	47.0	4.4	206.5	0.30	0.10	0	0.00	0.19	–	0.10	0.23	541.11	545.16
83	541.11	42	47.01	118.83	0.74%	0.88	4.4	0.07	42.4	4.4	187.3	0.30	0.11	0	0.00	0.18	–	0.09	0.97	542.08	544.10
83B	542.08	15	2.87	30.46	0.67%	0.20	3.9	0.06	--	--	--	--	0.00	--	0.00	0.06	0.08	0.04	0.24	542.32	543.70
83A	542.08	15	3.85	37.04	1.21%	0.45	3.8	0.06	--	--	--	--	0.00	--	0.00	0.06	0.07	0.04	0.48	542.56	542.73
84	542.08	42	42.39	114.18	0.60%	0.69	4.4	0.08	38.0	4.4	167.5	0.30	0.11	0	0.00	0.18	–	0.09	0.78	542.85	546.84
84A	543.49	15	2.19	194.32	0.39%	0.76	2.2	0.02	1.1	2.2	2.5	0.08	0.03	90	0.05	0.10	0.13	0.06	0.82	544.51	551.71
84B	544.76	15	1.11	41.35	0.10%	0.04	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.02	0.01	0.05	544.81	551.94
85	542.85	42	38.05	39.99	0.48%	0.19	4.4	0.08	35.3	4.4	155.2	0.30	0.10	0	0.00	0.18	–	0.09	0.28	543.14	546.84
86	543.14	42	35.31	25.08	0.42%	0.10	4.4	0.07	34.5	4.4	152.0	0.30	0.11	0	0.00	0.18	–	0.09	0.19	543.33	547.53
87	543.33	42	34.52	94.96	0.40%	0.38	4.4	0.08	31.3	4.4	138.1	0.30	0.11	0	0.00	0.18	–	0.09	0.47	543.80	547.06
87A	544.45	15	2.55	54.38	0.53%	0.29	3.2	0.04	--	--	--	--	0.00	--	0.00	0.04	0.05	0.03	0.31	544.86	548.72
88	543.80	42	31.27	120.97	0.33%	0.40	4.4	0.08	28.3	4.4	124.0	0.30	0.10	0	0.00	0.18	–	0.09	0.49	544.29	550.69
89	544.29	42	28.29	42.00	0.27%	0.11	4.4	0.07	25.4	6.3	160.5	0.62	0.22	0	0.00	0.29	–	0.15	0.26	544.55	550.69
90	544.55	36	25.38	24.32	0.49%	0.12	6.3	0.16	24.1	5.6	134.9	0.49	0.17	0	0.00	0.33	–	0.16	0.28	544.83	550.81
91	544.83	30	24.07	97.19	1.17%	1.13	5.6	0.12	20.5	5.6	114.5	0.49	0.17	0	0.00	0.29	–	0.15	1.28	546.11	551.29
90B	546.11	15	2.55	65.03	0.53%	0.34	4.7	0.09	--	--	--	--	0.00	--	0.00	0.09	0.11	0.06	0.40	546.87	551.78
92	546.11	30	20.48	119.49	0.85%	1.01	5.6	0.12	19.0	4.2	79.4	0.27	0.09	0	0.00	0.22	–	0.11	1.12	547.31	553.85
93	547.80	30	18.99	53.14	0.73%	0.39	4.2	0.07	12.3	4.2	51.4	0.27	0.10	45	0.14	0.30	–	0.15	0.54	548.34	553.50
93A	548.34	15	5.49	31.12	2.45%	0.76	2.2	0.02	2.7	2.2	6.1	0.08	0.03	90	0.05	0.10	0.13	0.06	0.83	549.16	553.39
93B	549.16	15	2.74	39.97	0.61%	0.24	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.02	0.01	0.26	549.42	553.38
94	548.35	30	12.30	117.96	0.31%	0.36	4.2	0.07	7.4	3.2	23.7	0.16	0.06	--	0.00	0.12	--	0.06	0.42	548.77	551.86
94A	548.77	15	2.61	60.00	0.55%	0.33	2.7	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.35	549.12	549.52
94B	548.77	15	2.87	68.25	0.67%	0.46	2.7	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.48	549.25	549.59
95	549.45	30	7.37	117.29	0.11%	0.13	3.2	0.04	3.2	3.2	10.3	0.16	0.06	0	0.00	0.10	0.13	0.06	0.19	549.64	555.87
96	550.14	30	3.19	40.63	0.02%	0.01	3.2	0.04	0.2	2.3	0.4	0.08	0.03	0	0.00	0.07	0.09	0.04	0.05	550.19	555.88
97	550.19	18	0.18	35.94	0.00%	0.00	2.3	0.02	--	--	--	--	0.00	--	0.00	0.02	0.03	0.01	0.01	550.20	553.00
98	552.78	30	21.31	23.74	0.91%	0.22	3.2	0.04	10.0	4.5	44.8	0.31	0.11	90	0.22	0.37	–	0.18	0.40	553.18	555.29
99	553.18	27	10.03	41.26	0.36%	0.15	3.0	0.04	5.5	3.0	16.4	0.14	0.05	0	0.00	0.08	0.11	0.05	0.20	553.38	555.29
99A	553.38	27	5.49	108.37	0.11%	0.12	3.0	0.03	--	--	--	--	0.00	--	0.00	0.03	0.05	0.02	0.14	553.52	552.91
101	540.15	48	45.17	207.02	0.34%	0.69	5.3	0.11	45.2	5.5	248.8	0.47	0.16	0	0.00	0.27	–	0.14	0.83	543.91	549.48
102	544.78	48	45.17	33.06	0.34%	0.11	5.5	0.12	45.2	5.6	251.7	0.48	0.17	45	0.24	0.53	–	0.26	0.37	545.15	549.46
103	545.15	48	45.17	32.31	0.34%	0.11	5.6	0.12	37.7	4.4	166.0	0.30	0.11	45	0.15	0.38	–	0.19	0.30	545.45	551.21
111	545.45	27	11.48	32.01	0.47%	0.15	3.0	0.03	10.5	3.0	31.7	0.14	0.05	45	0.07	0.15	–	0.08	0.23	545.68	551.23
112	545.68	24	10.50	28.59	0.73%	0.21	3.0	0.04	8.4	3.0	25.6	0.14	0.05	45	0.07	0.16	–	0.08	0.29	545.97	550.16
112A	545.97	15	0.91	32.62	0.07%	0.02	2.9	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.04	546.01	550.13
113	545.97	24	8.44	106.39	0.47%	0.50	3.0	0.04	8.4	3.0	25.6	0.14	0.05	45	0.07	0.16	–	0.08	0.58	546.55	551.55
114	546.55	24	8.44	146.58	0.47%	0.69	3.0	0.04	4.7	2.8	13.0	0.12	0.04	22.5	0.04	0.11	–	0.06	0.75	547.30	552.84
114A	547.30	24	4.70	118.22	0.15%	0.17	2.8	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.19	547.49	547.50
115	547.30	18	4.34	204.86	0.58%	1.18	2.5	0.02	1.9	3.9	7.2	0.23	0.08	0	0.00	0.11	0.14	0.07	1.25	548.55	550.64
115A	548.55	15	0.65	32.00	0.03%	0.01	3.9	0.06	--	--	--	--	0.00	--	0.00	0.06	0.08	0.04	0.05	548.60	550.64
116	548.55	15	1.86	21.00	0.28%	0.06	2.3	0.02	0.7	2.2	1.6	0.08	0.03	45	0.04	0.09	0.11	0.06	0.11	548.66	551.66
117	548.66	15	0.72	42.59	0.04%	0.02	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.03	0.01	0.03	548.69	551.69
104	547.37	42	37.67	367.80	0.48%	1.75	4.4	0.08	36.7	5.5	203.1	0.48	0.17	0	0.00	0.24	–	0.12	1.87	549.35	559.37
104A	555.32	24	2.61	40.02	0.05%	0.02	5.5	0.12	--	--	--	--	0.00	--	0.00	0.12	0.15	0.08	0.10	555.42	559.38
105	549.68	42	36.69	164.00	0.45%	0.74	4.4	0.07	36.7	4.4	162.4	0.30	0.11	0	0.00	0.18	–	0.09	0.83	550.51	559.61
105A	550.51	15	1.65	150.45	0.22%	0.33	2.4	0.02	0.8	2.4	2.0	0.09	0.03	90	0.06	0.11	0.15	0.07	0.41	551.03	555.03
105B	551.46	15	0.83	42.02	0.06%	0.02	2.4	0.02	--	--	--	--	0.00	--	0.00	0.02	0.03	0.01	0.04	551.50	555.04
106	550.76	42	36.69	122.00	0.45%	0.55	4.4	0.08	33.8	5.7	193.8	0.51	0.18	0	0.00	0.26	–	0.13	0.68	551.44	557.50
106A	551.44	15	3.62	40.11	1.06%	0.43	2.9	0.03	2.2	2.6	5.7	0.10	0.04	90	0.07	0.14	0.18	0.09	0.52	551.95	557.85
106B	551.95	15	2.22	40.93	0.40%	0.16	2.6	0.03	--	--	--	--	0.00	--	0.00	0.03	0.03	0.02	0.18	552.14	559.40
107	551.60	42	33.75	73.51	0.38%	0.28	5.7	0.13	30.6	4.1	124.1	0.26	0.09	0	0.00	0.22	–	0.11	0.39	551.99	556.91
107A	551.99	15	4.24	41.20	1.46%	0.60	3.5	0.05	--	--	--	--	0.00	--	0.00	0.05	0.06	0.03	0.63	552.62	556.91
200	552.40	42	30.61	107.99	0.31%	0.34	4.1	0.06	28.4	4.6	130.3	0.33	0.11	0	0.00	0.18	–	0.09	0.43	552.83	558.25
200A	552.83	18	3.11	40.65	0.30%	0.12	2.5	0.02	2.8	2.8	8.0	0.13	0.04	90	0.09	0.16	–	0.08	0.20	553.03	558.18
200B	553.03	15	2.81	27.40	0.64%	0.18	2.8	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.20	553.22	558.18
201	552.83	36	28.38	92.34	0.61%	0.57	4.6	0.08	26.6	9.0	240.0	1.26	0.44	0	0.00	0.52	–	0.26	0.83	553.66	560.61
201A	553.66	15	2.50	57.27	0.51%	0.29	9.0	0.32	--	--	--	--	0.00	--	0.00	0.32	0.41	0.21	0.50	557.18	558.30
202	553.66	36	26.62	99.73	0.54%	0.54	4.0	0.06	22.1	4.0	88.3	0.25	0.09	0	0.00	0.15	–	0.07	0.61	554.27	559.07

HYDRAULIC GRADE LINE COMPUTATIONS

INLET NUMBER	OUTLET WATER SURFACE ELEV.	D_o	Q_o	L_o	S_{fo} (%)	H_f	JUNCTION LOSS V_o	H_b	Q_i	V_i	Q_iV_i	$V_i^2/2g$	H_j	ANGLE	H_{Δ}	H_k	1.3H_k	0.5H_k	FINAL H	INLET WATER SURFACE ELEVATION	RIM ELEV.
214	554.27	21	5.47	41.42	0.40%	0.17	2.8	0.03	5.2	2.7	14.2	0.12	0.04	90	0.08	0.15	–	0.08	0.24	554.51	558.99
215	554.51	21	5.18	27.43	0.36%	0.10	2.7	0.03	2.9	2.9	8.6	0.13	0.05	45	0.07	0.14	0.18	0.09	0.19	554.70	560.08
216	554.70	18	2.94	33.27	0.27%	0.09	2.9	0.03	1.0	4.0	4.1	0.25	0.09	45	0.13	0.25	0.32	0.16	0.25	554.95	560.07
217	554.95	15	1.01	27.85	0.08%	0.02	4.0	0.06	--	--	--	--	0.00	--	0.00	0.06	0.08	0.04	0.06	555.02	559.00
203	554.27	36	22.13	79.23	0.37%	0.30	4.0	0.06	21.5	4.0	85.6	0.25	0.09	0	0.00	0.15	–	0.07	0.37	554.64	559.09
204	554.77	36	21.51	103.75	0.35%	0.37	4.0	0.06	21.5	4.0	85.8	0.25	0.09	0	0.00	0.15	–	0.07	0.44	555.21	561.36
205	555.49	36	21.51	44.59	0.35%	0.16	4.0	0.06	15.8	3.6	57.2	0.20	0.07	45	0.10	0.24	–	0.12	0.27	555.76	561.67
211	555.76	24	7.69	27.59	0.39%	0.11	3.1	0.04	3.6	2.5	9.1	0.10	0.03	90	0.07	0.14	0.18	0.09	0.20	555.96	561.08
211A	555.96	18	2.94	34.26	0.27%	0.09	2.5	0.02	--	--	--	--	0.00	--	0.00	0.02	0.03	0.02	0.11	556.07	560.95
212	555.96	18	3.58	321.99	0.39%	1.27	2.5	0.02	1.6	2.9	4.6	0.13	0.04	45	0.06	0.13	0.17	0.09	1.35	557.32	565.84
213	557.32	15	1.82	33.25	0.21%	0.07	2.9	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.09	557.41	565.84
206	555.86	36	15.79	88.05	0.19%	0.17	3.6	0.05	13.0	7.1	91.6	0.77	0.27	45	0.39	0.71	–	0.35	0.52	556.38	562.36
206A	556.38	15	3.13	16.41	0.80%	0.13	7.1	0.19	--	--	--	--	0.00	--	0.00	0.19	0.25	0.13	0.26	556.64	556.52
207	556.38	30	12.97	87.39	0.34%	0.30	3.5	0.05	10.6	3.8	40.1	0.22	0.08	0	0.00	0.12	–	0.06	0.36	556.74	560.70
208	558.28	30	10.64	29.13	0.23%	0.07	3.8	0.05	7.5	3.1	23.5	0.15	0.05	45	0.08	0.18	0.24	0.12	0.19	558.47	561.35
208A	557.78	18	2.48	42.56	0.19%	0.08	2.5	0.02	--	--	--	--	0.00	--	0.00	0.02	0.03	0.02	0.10	557.88	560.70
209	558.47	24	7.54	299.13	0.38%	1.13	3.1	0.04	5.2	3.0	15.8	0.14	0.05	45	0.07	0.16	0.21	0.10	1.23	559.80	565.83
210	560.18	24	5.20	33.22	0.18%	0.06	3.0	0.04	2.5	2.9	7.5	0.13	0.05	90	0.09	0.18	0.23	0.11	0.17	560.35	565.83
210A	560.35	18	2.55	117.28	0.20%	0.23	2.9	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.26	560.61	561.38
261	550.15	24	6.31	44.23	0.26%	0.12	3.1	0.04	3.2	7.1	22.3	0.77	0.27	23	0.23	0.54	–	0.27	0.39	555.07	559.99
261A	555.07	15	2.29	61.34	0.42%	0.26	7.1	0.19	--	--	--	--	0.00	--	0.00	0.19	0.25	0.13	0.39	558.17	559.17
262	555.19	18	3.16	109.98	0.31%	0.34	2.5	0.02	1.6	2.2	3.5	0.08	0.03	23	0.02	0.07	0.10	0.05	0.39	555.59	559.02
263	555.75	15	1.57	40.05	0.20%	0.08	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.02	0.01	0.09	555.84	559.02
222	550.15	24	4.45	91.96	0.13%	0.12	3.0	0.04	4.4	3.0	13.6	0.14	0.05	90	0.10	0.19	–	0.09	0.21	550.36	555.39
223	550.36	24	4.45	42.81	0.13%	0.06	3.0	0.04	1.8	2.2	4.0	0.08	0.03	90	0.05	0.12	0.15	0.07	0.13	550.50	554.16
223A	550.50	15	1.83	40.58	0.27%	0.11	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.02	0.01	0.12	550.62	554.29
225	550.15	30	12.36	25.63	0.31%	0.08	3.6	0.05	10.7	3.5	37.4	0.19	0.07	45	0.09	0.21	–	0.11	0.18	550.33	552.63
226	550.33	30	10.71	44.00	0.23%	0.10	3.5	0.05	9.0	3.0	27.4	0.14	0.05	90	0.10	0.20	–	0.10	0.20	550.53	552.63
231	550.15	42	34.22	107.86	0.39%	0.42	4.4	0.08	33.7	4.4	147.8	0.30	0.10	23	0.09	0.27	–	0.14	0.56	550.71	554.05
231B	550.53	24	9.01	179.38	0.54%	0.97	3.0	0.04	5.0	2.8	13.9	0.12	0.04	90	0.08	0.16	0.21	0.10	1.07	551.60	553.79
232	550.71	42	33.67	36.87	0.38%	0.14	4.4	0.07	26.1	4.4	115.0	0.30	0.11	0	0.00	0.18	–	0.09	0.23	550.94	554.15
233	551.01	42	4.49	43.74	0.01%	0.00	4.4	0.07	--	--	--	--	0.00	--	0.00	0.07	0.10	0.05	0.05	551.06	554.38
234	551.37	42	26.12	28.32	0.23%	0.06	4.4	0.08	20.8	3.7	77.8	0.22	0.08	0	0.00	0.15	–	0.08	0.14	551.51	555.10
234B	551.60	21	5.05	47.42	0.34%	0.16	2.8	0.03	1.2	2.2	2.6	0.08	0.03	45	0.04	0.09	0.12	0.06	0.22	551.83	553.51
234A	551.83	15	1.18	24.79	0.11%	0.03	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.02	0.01	0.04	551.87	554.98
235	551.51	33	20.80	102.01	0.52%	0.54	3.7	0.05	19.1	8.4	161.6	1.11	0.39	0	0.00	0.44	–	0.22	0.76	552.27	556.31
235A	552.27	15	2.55	22.88	0.53%	0.12	8.4	0.28	--	--	--	--	0.00	--	0.00	0.28	0.36	0.18	0.30	553.45	554.55
236	552.27	33	19.15	102.91	0.44%	0.46	3.8	0.05	19.1	3.8	72.8	0.22	0.08	0	0.00	0.13	–	0.07	0.52	552.79	557.43
237	552.79	33	19.15	24.31	0.44%	0.11	3.8	0.06	16.6	3.8	62.5	0.22	0.08	0	0.00	0.13	–	0.07	0.17	552.96	558.06
238	552.96	33	1.44	41.30	0.00%	0.00	3.8	0.06	--	--	--	--	0.00	--	0.00	0.06	0.07	0.04	0.04	553.00	558.77
239	552.96	30	16.60	27.79	0.56%	0.15	3.6	0.05	11.4	6.4	73.0	0.64	0.22	0	0.00	0.27	–	0.14	0.29	553.33	559.04
239A	553.33	21	4.80	43.24	0.31%	0.13	2.8	0.03	3.9	3.2	12.7	0.16	0.06	90	0.11	0.20	–	0.10	0.23	553.56	559.04
239B	553.56	18	3.92	35.78	0.47%	0.17	3.2	0.04	--	--	--	--	0.00	--	0.00	0.04	0.05	0.03	0.20	553.76	558.03
240	554.23	24	11.36	95.26	0.85%	0.81	6.4	0.16	9.2	10.6	98.3	1.76	0.62	0	0.00	0.78	–	0.39	1.20	556.27	561.12
240A	556.30	15	2.61	19.00	0.55%	0.11	10.6	0.44	--	--	--	--	0.00	--	0.00	0.44	0.57	0.29	0.39	558.31	559.45
241	556.90	24	9.24	100.27	0.57%	0.57	3.9	0.06	9.2	3.9	36.4	0.24	0.08	0	0.00	0.14	–	0.07	0.64	557.60	563.34
242	558.00	24	9.24	29.54	0.57%	0.17	3.9	0.06	7.4	3.6	26.5	0.20	0.07	45	0.10	0.23	0.30	0.15	0.32	558.32	564.48
243	558.32	21	7.43	33.28	0.75%	0.25	3.6	0.05	5.6	3.6	20.1	0.20	0.07	45	0.10	0.22	0.29	0.14	0.39	558.71	564.54
244	558.71	21	5.59	27.79	0.42%	0.12	3.6	0.05	3.8	4.4	16.8	0.31	0.11	45	0.15	0.31	–	0.16	0.27	558.98	565.00
244A	558.98	15	0.98	43.23	0.08%	0.03	2.2	0.02	--	--	--	--	0.00	--	0.00	0.02	0.02	0.01	0.05	559.03	565.00
245	558.98	15	3.77	106.36	1.16%	1.23	4.4	0.08	2.2	8.7	19.2	1.16	0.41	45	0.58	1.07	–	0.53	1.76	560.84	567.35
245A	561.18	15	2.22	35.16	0.40%	0.14	8.7	0.29	--	--	--	--	0.00	--	0.00	0.29	0.38	0.19	0.33	563.79	564.92
246	561.18	15	1.74	180.81	0.25%	0.45	3.5	0.05	1.0	2.8	2.8	0.13	0.04	0	0.00	0.09	0.12	0.06	0.51	563.49	571.26
247	564.04	15	0.98	43.42	0.08%	0.03	2.8	0.03	--	--	--	--	0.00	--	0.00	0.03	0.04	0.02	0.05	564.09	571.32
173A	557.35	18	2.48	108.98	0.19%	0.21	2.3	0.02	--	--	--	--	0.00	--	0.00	0.02	0.03	0.01	0.22	557.57	558.48
173	557.04	24	7.77	40.04	0.40%	0.16	2.8	0.03	2.5	2.3	5.6	0.08	0.03	90	0.06	0.12	0.15	0.08	0.24	557.28	561.90
172	553.18	24	8.99	288.05	0.54%	1.54	4.5	0.08	7.8	2.8	22.0	0.12	0.04	90	0.09	0.21	–	0.10	1.65	554.83	561.90
171	550.15	24	0.86	39.98	0.00%	0.00	3.4	0.04	--	--	--	--	0.00	--	0.00	0.04	0.06	0.03	0.03	553.61	559.09

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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RICHARD J. DEEK REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

STORM SEWER COMPUTATIONS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 37 OF 71

E&S CONTROL - PHASE I OVERALL

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 38 OF 71

RICHARD J. DEAD — 20864 — STATE OF WEST VIRGINIA — PROFESSIONAL ENGINEER

MORRIS & RITCHIE ASSOCIATES, INC.
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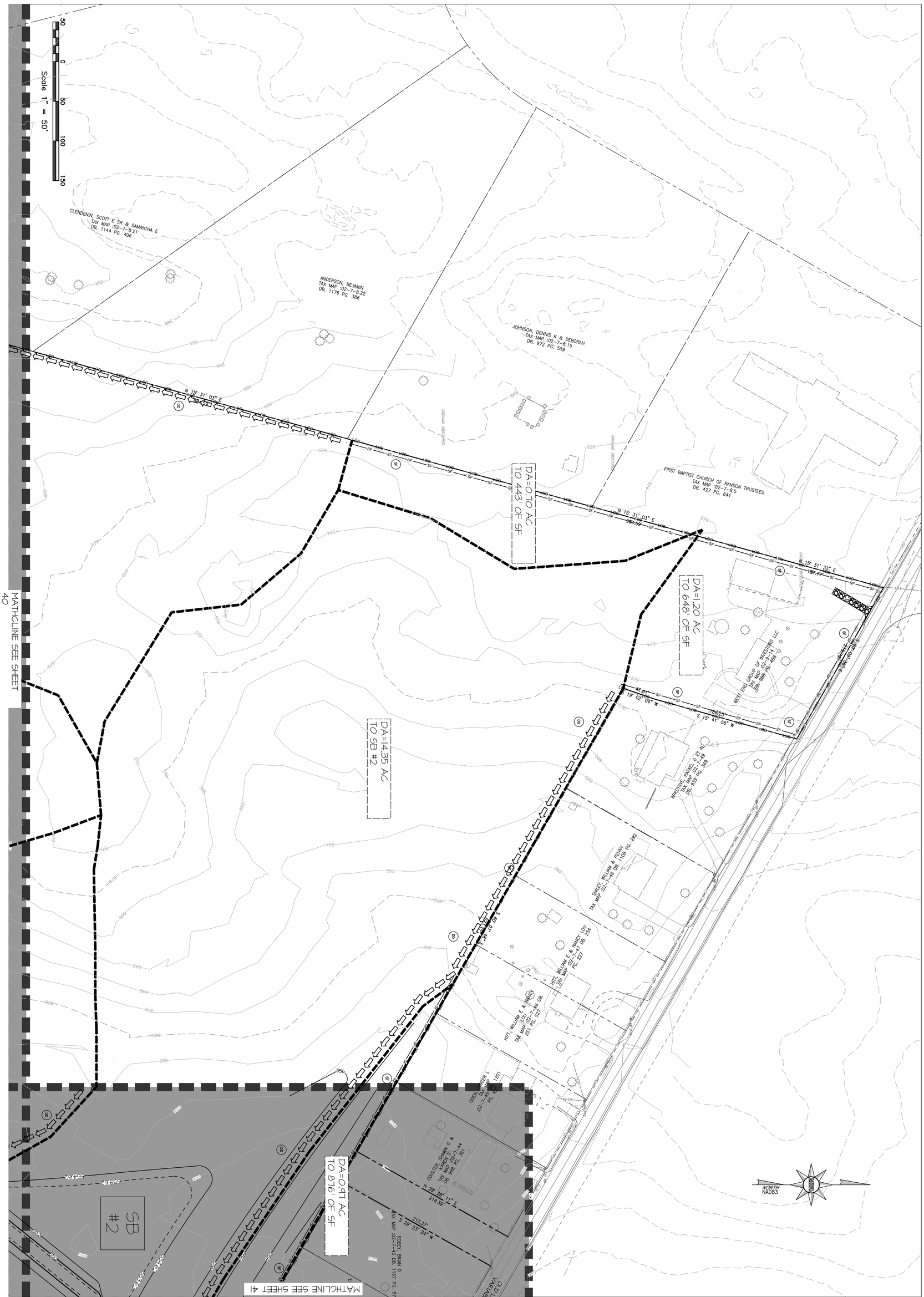
DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS



E&S CONTROL - PHASE I

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

RICHARD DEAN ROAD — REGISTERED PROFESSIONAL ENGINEER — 20884 — STATE OF WEST VIRGINIA

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JOB NO.: 21115

SCALE: AS SHOWN

DATE: 04/18/2025

DRAWN BY: KM/BZ

DESIGN BY: KM/BZ

REVIEW BY: RJD

SHEET: 39 OF 71

MATCHLINE SEE SHEET 39

MATCHLINE SEE SHEET 41

DA=11.60 AC
TO SB #1

SB #1

6'x6' RISER BOX
w/ 18" RCP OUT
(SEE SHEET 54 FOR DESIGN)

DA=1.97 AC
TO 1,029' OF SF

DA=2.93 AC
TO ST#3B

4'x4' RISER BOX
w/ 18" RCP OUT
(SEE SHEET 56 FOR
DESIGN)

ST #3B

DA=4.78 AC
TO ST#3A

ST #3A

DA=0.36 AC
TO 210' OF SF

DA=0.88 AC
TO 582' OF SF

Scale 1" = 50'

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PROFESSIONAL ENGINEER
7/28/25

E&S CONTROL - PHASE I

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

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DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	40 OF 71

MATHCLINE SEE SHEET 39

MATHCLINE SEE SHEET 40

OLD LEETOWN ROAD
VARIABLE WIDTH R/W

ROBEY, BRIAN O
TAX MAP :02-7-43 DB. 1167 PG. 573

ROBEY, BRIAN O
TAX MAP :02-7-42 DB. 1167 PG. 573

DA=0.97 AC
TO 876' OF SF

LESTER, RICHARD E
TAX MAP :02-7-41 DB. 1145 PG. 586

HESS, JULIE S.
TAX MAP :02-7-41.1
DB. WB15 PG. PG1

COOPER, CHAD R & NARISCHA RATTANA
TAX MAP :02-7-40
DB. 1210 PG. 416

SB #2

VALERI, JOYCE S. & VALERI FAMILY REV TRUST
TAX MAP :02-7-39
DB. 1131 PG. 69

4'x4' RISER BOX
w/ 18" RCP OUT
(SEE SHEET 56 FOR DESIGN)

DA=2.93 AC
TO ST#3B

ST #3B

ST #3A

TEMPORARY
STOCKPILE AREA

HUNTWELL WV, LLC
TAX MAP :02-7-1
ZONED: RC
1.0 AC.

"PARCEL 'B'"
16219 SF
1.1445 AC.

BRAXTON AVENUE
ST-54-36

SHERMAN AVENUE
ST-54-36

FREEMAN STREET
DR-50-36

COX, JOHN S & SHIRLEY, DIAS T
TAX MAP :02-7-67
DB. 944 PG. 715

GANT, JUSTIN B
TAX MAP :02-7-66
DB. 1151 PG. 390

BEALL, JOSHUA M & KERIN
TAX MAP :02-7-65
DB. 1017 PG. 48

LUCAS, FRED M & ESTHER V
TAX MAP :02-7-64
DB. 949 PG. 123

TYRREL, C
TAX MAP :0
DB. 964 I

THREE SISTERS CT
(40' R/W)

S 01° 01' 06" E
325.94'

NORTH
NAD83

Scale 1" = 50'

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7/28/25

E&S CONTROL - PHASE I

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

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E&S CONTROL - PHASE II OVERALL

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115

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E&S CONTROL - PHASE II

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

RICHARD P. DEAD — REGISTERED PROFESSIONAL ENGINEER — STATE OF WEST VIRGINIA — 20884

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DRAWN BY: KM/BZ

DESIGN BY: KM/BZ

REVIEW BY: RJD

SHEET: 43 OF 71

MATCHLINE SEE SHEET 43

MATCHLINE SEE SHEET 45

DA TO STR 234A 0.22 AC C =0.82
DA TO STR 234 0.30 AC C =0.74
DA TO STR 235A 0.90 AC C =0.49
DA TO STR 239A 0.18 AC C =0.80
DA TO STR 239 0.21 AC C =0.70
DA TO STR 238 0.33 AC C =0.75
DA TO STR 240A 0.93 AC C =0.43
DA TO STR 239 0.11 AC C =0.75
DA TO STR 232 0.74 AC C =0.74
DA TO STR 226 0.32 AC C =0.89
DA TO STR 225 0.39 AC C =0.89
DA TO STR 229A 0.38 AC C =0.73
DA TO STR 229 0.53 AC C =0.78
DA TO STR 231 0.36 AC C =0.75
DA TO STR 261 0.22 AC C =0.79
DA TO STR 261A 0.83 AC C =0.42
DA TO STR 262 0.34 AC C =0.72
DA TO STR 263 0.32 AC C =0.75
DA TO STR 117 0.15 AC C =0.75
DA TO STR 116 0.24 AC C =0.75
DA TO EX STR 114A 1.65 AC C =0.44
DA TO STR 215 0.48 AC C =0.73
DA TO STR 214 0.11 AC C =0.64
DA TO STR 202 0.09 AC C =0.64
DA TO STR 201A 1.09 AC C =0.44
DA TO STR 200A 0.07 AC C =0.64
DA TO STR 200 0.07 AC C =0.64
DA TO STR 200B 0.36 AC C =0.76
DA TO STR 107A 0.85 AC C =0.76
DA TO STR 107 0.09 AC C =0.77
DA TO STR 106B 0.82 AC C =0.41
DA TO STR 106A 0.36 AC C =0.80
DA TO EX STR 104A 0.61 AC C =0.75
DA TO EX STR 96 0.35 AC C =0.90
DA TO EX STR 95 0.91 AC C =0.75
DA TO EX STR 94B 1.01 AC C =0.43
DA TO EX STR 94A 0.91 AC C =0.44
DA TO STR 93A 0.81 AC C =0.75
DA TO STR 93B 0.57 AC C =0.74
DA TO EX STR 93 0.39 AC C =0.75
DA TO EX STR 92 0.45 AC C =0.75
DA=±1.31 AC

Braxton Avenue
Sherman Avenue
Ingalls Street
Curry Street
Hunterwest Boulevard
Cedar Creek Drive
Cedar Creek Road

REVISIONS	DATE
CITY OF RANSON, CTUB, AND WVAW COMMENTS	6/12/25
CITY OF RANSON, CTUB, AND WVAW COMMENTS	7/28/25

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7/28/25

E&S CONTROL - PHASE II

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
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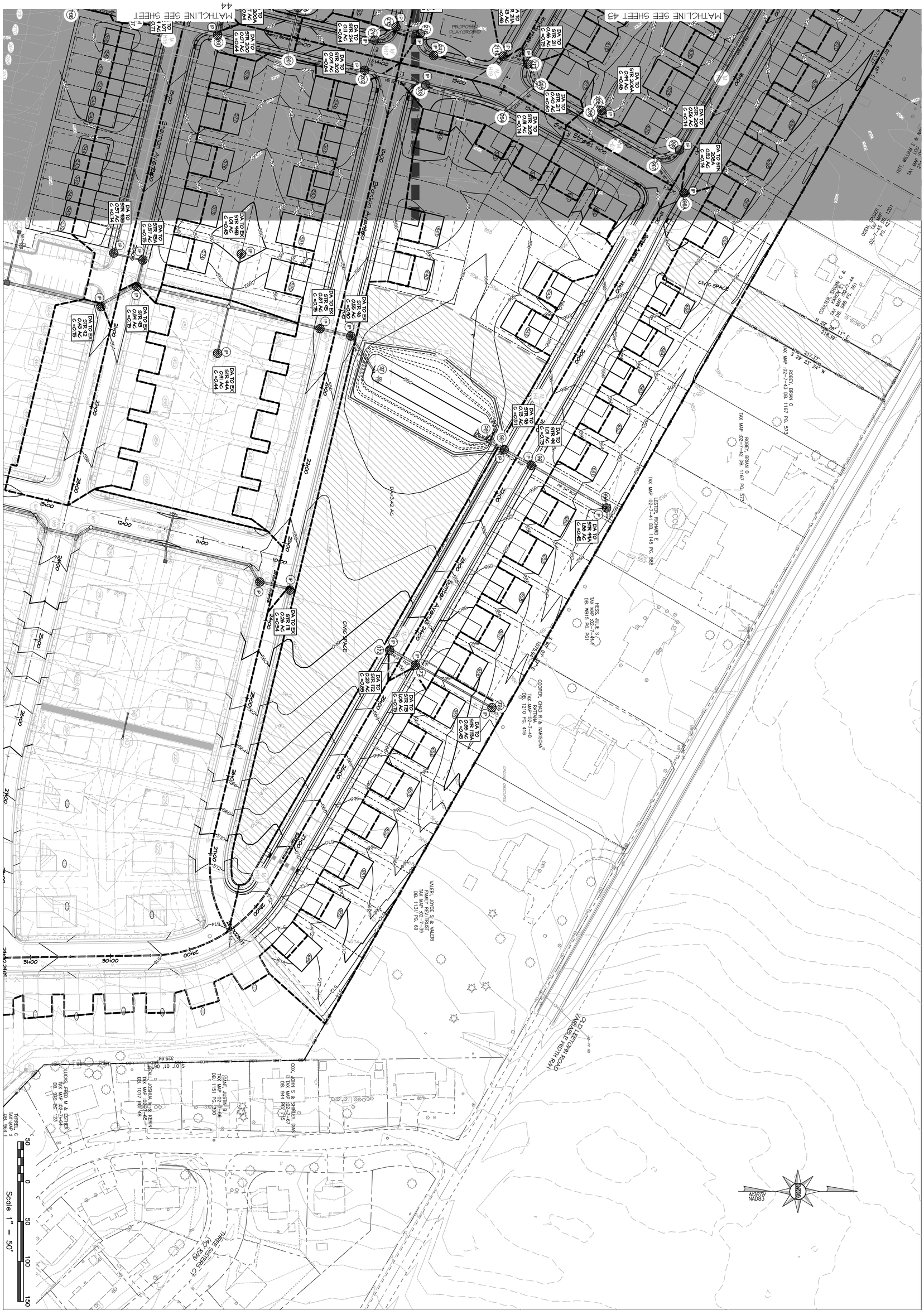
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	44 OF 71

50 0 50 100 150
Scale 1" = 50'



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E&S CONTROL - PHASE II

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

RICHARD J. DEAD — REGISTERED PROFESSIONAL ENGINEER — STATE OF WEST VIRGINIA — 20864

MORRIS & RITCHIE ASSOCIATES, INC.

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SITE SPECIFIC EROSION & SEDIMENT CONTROL NOTES

PROJECT DESCRIPTION:
HUNTWELL WV, LLC IS PROPOSING TO DEVELOP A RESIDENTIAL SUBDIVISION WITH ACCESS ROADS, UTILITIES AND DRAINAGE IMPROVEMENTS. ACCESS TO THE SITE WILL BE FROM N. MILDRED STREET (ROUTE 115) AND OLD LEETOWN PIKE. PHASE 3 OF THIS PROJECT WILL DISTURB APPROXIMATELY 117.62 ACRES AND INCLUDES THE CONSTRUCTION OF ROADS, UTILITIES, GRADING, LANDSCAPING, AND OTHER IMPROVEMENTS ASSOCIATED WITH RESIDENTIAL DEVELOPMENTS. CONSTRUCTION TRAFFIC WILL ACCESS THE SITE FROM NORTH MILDRED STREET. PHASE 3 WILL PRIMARILY DRAIN SOUTH, EVENTUALLY REACHING N. MILDRED STREET (ROUTE 115) AFTER ONSITE TREATMENT.

EXISTING SITE CONDITIONS:
THE PROPERTY AS A WHOLE IS CHARACTERIZED BY AREAS OF CROPS, GRASS, WOODS AND ROCK OUTCROPPINGS. THE LAND CONTAINS OPEN PASTURE WITH WOODS ON THE NORTHERN PORTION OF THE SITE WITH INTERMITTENT ROCK OUTCROPPINGS.

ADJACENT AREAS:
THE SITE IS APPROXIMATELY 190.09 ACRES WITH OLD LEETOWN PIKE TO THE NORTH AND N. MILDRED STREET (ROUTE 115) TO THE EAST. THE OTHER SURROUNDING AREAS ARE COMPRISED OF RESIDENTIAL LOTS TO THE NORTH, SOUTH AND EAST, & AGRICULTURAL LAND SOUTH & WEST.

CRITICAL AREAS:
THERE ARE NO CRITICAL AREAS WITHIN THE PROPOSED DISTURBANCE.

SOILS:
HbB– HAGERSTOWN SILT LOAM, 3 TO 8 PERCENT SLOPES, HYDROLOGIC GROUP B
HeB– HAGERSTOWN SILT LOAM, 3 TO 8 PERCENT SLOPES, VERY ROCKY, HYDROLOGIC GROUP B
HeC– HAGERSTOWN SILT LOAM, 8 TO 15 PERCENT SLOPES, VERY ROCKY, HYDROLOGIC GROUP B
HrC– HAGERSTOWN ROCK OUTCROP–COMPLEX, 8 TO 15 PERCENT SLOPES, HYDROLOGIC GROUP B
PmB– POPLIMENTO SILT LOAM, 3 TO 8 PERCENT SLOPES, HYDROLOGIC GROUP B
Tm– TOMS SILT LOAM, 0 TO 3 PERCENT SLOPES, HYDROLOGIC GROUP B
Ub– URBAN LAND, 0 TO 35 PERCENT SLOPES, HYDROLOGIC GROUP D
Uu– URBAN LAND–UDORTHENTS, 0 TO 35 PERCENT SLOPES, HYDROLOGIC GROUP D
UwC– URBAN LAND–HAGERSTOWN COMPLEX, 0 TO 15 PERCENT SLOPES, HYDROLOGIC GROUP B
VtC– VERTREES–ROCK OUTCROP COMPLEX, 8 TO 15 PERCENT SLOPES, HYDROLOGIC GROUP C

ESC MEASURES:
THE FOLLOWING SHALL BE INSTALLED IN ACCORDANCE WITH THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL MANUAL:
1. TEMPORARY STONE CONSTRUCTION ENTRANCE
2. SILT FENCE
3. SUPER SILT FENCE
4. INLET PROTECTION
5. DIVERSION DIKE
6. SEDIMENT TRAP
7. SEDIMENT BASIN
8. OUTLET PROTECTION
9. RIPRAP
10. TEMPORARY SEEDING
11. PERMANENT SEEDING

CONSTRUCTION SEQUENCING:
PHASE I
1. HOLD PRE–CONSTRUCTION MEETING. CONTACT CITY STAFF A MINIMUM OF 5 DAYS PRIOR TO THE PRE–CONSTRUCTION MEETING. LOCATE ALL UTILITIES. CONTACT WEST VIRGINIA MISS UTILITY AT 800–245–4848, AT LEAST THREE (3) WORKING DAYS PRIOR TO BEGINNING WORK.
2. INSTALL CONSTRUCTION ENTRANCE
3. CLEAR AND INSTALL PERIMETER CONTROLS SUCH AS SILT FENCE, SUPER SILT FENCE, CHANNEL DIVERSION, AND DIVERSION DIKES.
4. CONSTRUCT SEDIMENT BASINS AND TRAPS.
5. FOLLOWING THE INSTALLATION OF E&S CONTROLS, CLEAR THE REMAINDER OF THE SITE WITHIN THE PROPOSED AREA OF DISTURBANCE.

PHASE II
1. BEGIN SITE GRADING.
2. INSTALL WATER LINES, SANITARY AND STORM SEWER PIPES, AND OTHER UNDERGROUND UTILITIES.
3. INSTALL DRAINAGE FACILITIES INCLUDING STORM SEWER INLETS, CULVERTS, SWALES, AND OTHER DRAINAGE FEATURES, INCLUDING INLET AND OUTLET PROTECTION AS REQUIRED.
4. CONSTRUCT CURBS, ROAD, SIDEWALK, AND OTHER UTILITIES.
5. PERMANENTLY SEED DENUDED AREAS AS SOON AS GRADING IS COMPLETE FOR A GIVEN AREA.
6. CONVERT THE SEDIMENT BASINS #1 & #2 INTO THE PERMANENT SWM PONDS #4 & #5. THE SEDIMENT TRAPS WILL BE FILLED IN ONCE UPSTREAM AREAS ARE STABILIZED.
7. REMOVE ALL E&S CONTROL MEASURES AFTER AREA IS STABILIZED, BUT ONLY AS APPROVED AND DIRECTED BY THE INSPECTOR.

STABILIZATION:

THIS WORK SHALL COVER ALL OPERATIONS INCIDENTAL TO THE ESTABLISHMENT OF GRASS AND LEGUME VEGETATION, INCLUDING THE FURNISHING AND SOWING OF SEED, FURNISHING AND APPLYING FERTILIZER, AGRICULTURAL LIMESTONE, AND MULCH MATERIAL.

SEEDING AND MULCHING SHALL BE PERFORMED ON ALL CUT AND FILL SLOPES, INCLUDING CUT AND FILL SLOPES ASSOCIATED WITH WASTE SITES AND BORROW SITES, DURING THE CONSTRUCTION PROCESS. THE SEEDING AND MULCHING OF THESE EXPOSED AND/OR DISTURBED AREAS AS QUICKLY AS POSSIBLE IS ESSENTIAL FOR PROPER EROSION AND SEDIMENT CONTROL. WHEN USING STRAW OR HAY MULCH, THE SEQUENCE OF APPLICATION SHALL BE AS FOLLOWS: (1) SEED AND FERTILIZER SHALL BE SOWN PRIOR TO MULCHING. (2) MULCH AND MULCH BINDER SHALL BE PLACED WITHIN 24 HOURS OF SOWING SEED.

ALL ADDITIONAL DISTURBED AREAS SUCH AS DIVERSION DITCHES, SEDIMENT TRAPS AND BASINS, AREAS AROUND SEDIMENT STRUCTURES, HAUL ROAD CUT AND FILL SLOPES, CLEARED AND GRUBBED AREAS, STORAGE AREAS, BATCH PLANT LOCATIONS, ETC. SHALL BE SEEDED AND MULCHED AS QUICKLY AS POSSIBLE FOLLOWING DISTURBANCE TO MINIMIZE EROSION.

ANY AREAS FAILING TO ESTABLISH A SATISFACTORY STAND OF GRASS DUE TO WEATHER CONDITIONS, ADVERSE SOIL CONDITIONS, OR DUE TO EROSION, SHALL BE RESEEDED, FERTILIZED, AND MULCHED AS DEFINED IN THE SPECIFICATIONS.

SEEDING AND MULCHING OF DISTURBED AREAS SHALL BE DONE AT A MINIMUM OF ONCE EVERY 14 DAYS UNLESS OTHERWISE NOTED IN THE PLANS. WHEN ALL CONSTRUCTION ACTIVITIES IN AN AREA IS PLANNED TO CEASE FOR MORE THAN 14 DAYS, THAT AREA SHALL BE SEEDED AND MULCHED WITHIN FOUR DAYS.

ALL CUT SLOPE BENCH AREAS SHALL BE SEEDED AND MULCHED AFTER COMPLETION OF EACH BENCH, REGARDLESS OF HEIGHT.

ALL DISTURBED AREAS SUCH AS DIVERSION DITCHES, SEDIMENT CONTROL STRUCTURES, HAUL ROAD SLOPES, ETC. ARE TO BE SEEDED AND MULCHED UPON COMPLETION OF EACH OPERATION, INCLUDING MAINTENANCE.

MAINTENANCE: THE EROSION AND SEDIMENT CONTROL MEASURES INSTALLED ON THIS SITE SHALL BE MAINTAINED BY PERFORMING THE FOLLOWING:

1. THE SITE SUPERINTENDENT SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL DEVICES AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED PERIODS OF RAINFALL. DAMAGED OR DEFICIENT CONTROLS SHALL BE REPAIRED OR IMPROVED IMMEDIATELY.
2. THE SITE SUPERINTENDENT SHALL INSPECT DAILY THE AREAS OF CONSTRUCTION ACTIVITY TO INSURE EROSION CONTROL EFFECTIVENESS. ADDITIONAL MEASURES SHALL BE INSTALLED IMMEDIATELY WHERE DEFICIENCIES ARE FOUND.

SOILS INFORMATION				
TYPE	NAME	SLOPE	DEPTH TO TABLE	HSG
10A	MONGLE SILT LOAM	0-2%	10-24 INCHES	C/D
17B	MIDDLEBURG LOAM	2-7%	MORE THAN 80 INCHES	A
18D	TANKERVILLE LOAM	15-25%	MORE THAN 80 INCHES	B
20C	TANKERVILLE/PURCELLVILLE-COMPLEX	7-15%	MORE THAN 80 INCHES	B
20D	TANKERVILLE/PURCELLVILLE-COMPLEX	15-25%	MORE THAN 80 INCHES	B
23C	PURCELLVILLE SILTY CLAY LOAM	7-15%	MORE THAN 80 INCHES	B
28C	FAUQUIER AND EUBANKS SOILS	7-15%	MORE THAN 80 INCHES	B
31C	PURCELLVILLE/TANKERVILLE-COMPLEX	7-15%	MORE THAN 80 INCHES	B
38B	SWAMPOODLE LOAM	2-7%	24-40 INCHES	C
55C	ELIOAK LOAM	7-15%	MORE THAN 80 INCHES	B

EROSION AND SEDIMENT CONTROL NARRATIVE CONT'D:

A. AT A MINIMUM, INSPECTIONS OF ALL EROSION AND SEDIMENT CONTROLS ARE TO CONDUCTED ONCE EVERY 4 CALENDAR DAYS & WITHIN 24 HOURS AFTER ANY STORM EVENT OF 0.25 INCHES OR GREATER OF RAINFALL PER 24 HOURS BY THE SUPERINTENDENT OR HIS REPRESENTATIVE, ANY DAMAGED STRUCTURAL MEASURES ARE TO BE REPAIRED BY THE END OF THE WORKING DAY.

B. EXCEPT AS NOTED BELOW, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOUR DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS BEEN PERMANENTLY CEASED.

C. WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 4TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW.

D. CONTROLS MAY BE REMOVED AFTER THE AREAS ABOVE THEM HAVE BEEN STABILIZED AND WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.

E. DEVICES SHOWN ARE TO BE CONSIDERED MINIMUM EROSION AND SEDIMENTATION CONTROLS. ADDITIONAL CONTROLS MAY BE NECESSARY DUE TO CONTRACTOR'S PHASING OR OTHER UNANTICIPATED CONDITIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADDITIONAL DEVICES AS NECESSARY IN ORDER TO CONTROL EROSION AND SEDIMENTATION. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION IN THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.

F. THE CONTRACTOR IS TO PROVIDE ADEQUATE MEANS OF CLEANING AND REMOVING ALL LAYING DUST AS NECESSARY BY APPLYING EITHER MOISTURE, CALCIUM CHLORIDE, OR OTHER APPROVED MATERIALS ALONG THOSE SECTIONS OF THE PROJECT ADJACENT TO EXISTING DWELLINGS OR PUBLIC ACCESS.

G. ALL DEVICES MUST BE CLEANED OUT WHEN SEDIMENT OCCUPIES HALF OF THE WET CAPACITY OF THE STRUCTURE.

H. ALL TRAPPED SEDIMENTS SHALL BE DISPOSED OF IN AN UPLAND AREA WHERE THERE IS NO CHANCE OF ENTERING ANY NEARBY STREAMS.

I. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 14 DAYS FROM WHEN ACTIVITIES CEASES, (E.G. THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 14 DAYS0 THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THE PORTION OF THE SITE BY THE FOURTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.

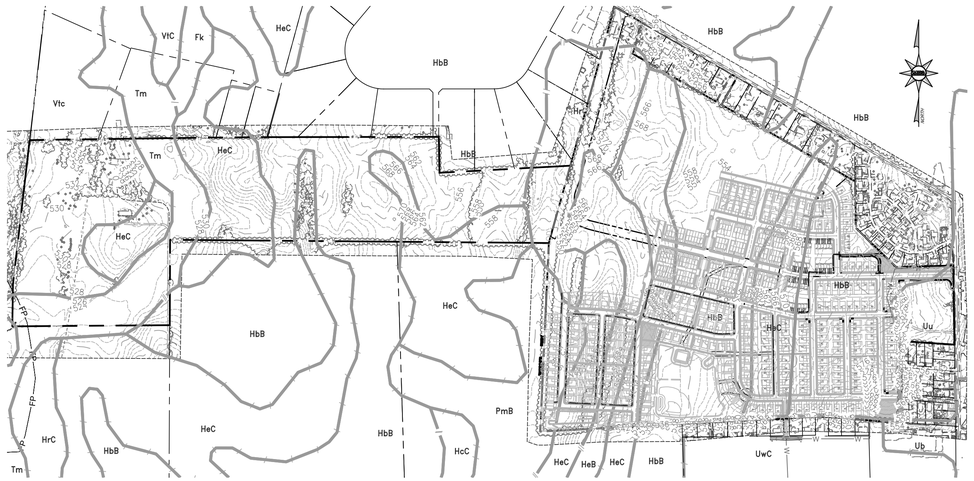
J. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

TEMPORARY CRITICAL AREA PLANTING SPECIFICATIONS:

1. DURATION – SEED ALL TOPSOIL PILES, BORROW AREAS, AND CLEARED LAND WHICH WILL NOT BE PAVED, BUILT UPON OR ESTABLISHED IN PERMANENT VEGETATION FOR LONGER THAN THREE WEEKS, BUT LESS THAN A YEAR, AND ALL STEEP CUT AND FILL SLOPES WHERE NO FURTHER ACTIVITY WILL OCCUR UNTIL FINAL GRADING.
2. FERTILIZATION – APPLY 400 POUNDS PER ACRE OF 10–10–10 FERTILIZER.
3. SEEDING METHOD – BROADCAST OR DRILL SEED IMMEDIATELY AFTER DISTURBANCE.
4. MULCHING SEEDING – MULCH THE SEEDING IMMEDIATELY AFTER SEEING WITH TWO (2) TONS OF STRAW OR WEED–FREE HAY PER ACRE, WOOD FIBER OR MULCH NETTING. ANCHOR STRAW OR HAY WITH ASPHALT EMULSION, CHEMICAL ANCHORING SOLUTION, NETTING, OR A MULCH ANCHORING TOOL.
5. MULCHING ALONE – MULCH MAY BE USED ALONE TO PROTECT AREAS FOR LESS THAN THREE WEEKS OR WINTER PROTECTION OF AREAS EXPOSED BETWEEN NOVEMBER 1 AND MARCH 1. THE MULCH RATE SHOULD BE THREE (3) TONS OF STRAW OR HAY PER ACRE WHEN NO SEED IS APPLIED.
6. SPECIES TO SEED, TIME OF SEEDING, AND RATES:

SPECIES TO SEED	SEEDING DATES	POUNDS PER ACRE	POUNDS PER 1000 SQ. FT.
OATS	MARCH 1 TO JUNE 15	96	2.40
REDTOP	MARCH 1 TO JUNE 15	5	0.12
	AUGUST 15 TO SEPTEMBER 15	5	0.12
ANNUAL RYEGRASS	MARCH 1 TO JUNE 15	40	1.00
	AUGUST 15 TO SEPTEMBER 15	40	1.00
MILLET	JUNE 15 TO NOVEMBER 1	168	4.20
WHEAT	AUGUST 15 TO NOVEMBER 1	180	4.50

7. AREAS WHERE THE SEED HAS FAILED TO GERMINATED ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.



SOILS MAP
SCALE: 1"=500'

PERMANENT CRITICAL AREA PLANTING SPECIFICATIONS:

HERBACEOUS PLANTS:
1. RUNOFF CONTROL – CONTROL RUNOFF FLOWING ACROSS THE SITE WITH TEMPORARY AND PERMANENT STRUCTURES AS NECESSARY. REFER TO STRUCTURAL MEASURES SECTION OF THE WEST VIRGINIA EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE MANUAL.
2. TILLAGE – PREPARE THE SEEDBED BY TILLAGE TO A DEPTH OF 4–6 INCHES. APPLY LIME AND FERTILIZER BEFORE THE FINAL TILLAGE OPERATION. CULTIPACK THE SEEDBED.
3. LIMING – APPLY LIME ACCORDING TO A SOIL TEST TO CORRECT THE pH TO 5.5 TO 6.0. IF A SOIL TEST CANNOT BE ANALYZED BEFORE LIME MUST BE APPLIED, APPLY THREE TONS OF GROUND LIMESTONE PER ACRE (150 POUNDS PER 1,000 SQUARE FEET) AND APPLY THE BALANCE RECOMMENDED BY THE SOIL TEST WHEN THE TEST RESULTS ARE AVAILABLE.
4. FERTILIZER – APPLY FERTILIZER ACCORDING TO A SOIL TEST. IF A SOIL TEST CANNOT BE ANALYZED BEFORE FERTILIZER MUST BE APPLIED, APPLY 500 POUNDS OF 1–020–10 (12 POUNDS PER 1,000 SQUARE FEET) AND APPLY THE BALANCE RECOMMENDED BY THE SOIL TEST. IF NITROGEN APPLICATIONS CANNOT BE SPLIT, NITROGEN SHOULD BE APPLIED AS UREA–FORMALDEHYDE, OR SULFUR–COATED UREA.
5. SEEDING METHOD – SOW SEED BE HYDROSEEDER, DRILL, OR BROADCAST AND CULTIPACKED. ALL SPREADERS SHOULD BE CALIBRATED BEFORE USE. FOR EVEN DISTRIBUTION, THE SEED SHOULD BE DIVIDED IN HALF AND SPREAD IN PERPENDICULAR DIRECTIONS.
6. MULCHING – MULCH THE SEEDING IMMEDIATELY AFTER SEEDING WITH TWO TONS OF STRAW OR WEED–FREE HAY PER ACRE, WOOD FIBER, OR MULCH NETTING. ANCHOR THE STRAW OR HAY WITH ASPHALT EMULSION, CHEMICAL ANCHORING SOLUTION, NETTING, OR A MULCH ANCHORING TOOL.
7. SPECIES TO SEED AND RATE OF SEEDING.

SPECIES [2]	SEEDING RATE (# PER ACRE[1])	DRAINAGE ADAPTIONS EXCESSIVELY DRAINED	POORLY DRAINED
TALL FESCUE	60	X	X
TALL FESCUE AND RED FESCUE OR HARD FESCUE	40 10 10	X	X
TALL FESCUE BIRD'S–FOOT TREFOIL[3]	20 6	X	X
RED FESCUE OR HARD FESCUE BIRD'S–FOOT TREFOIL[3]	20 20 6	X	
TALL FESCUE RED FESCUE OR HARD FESCUE SERICEA LESPEDEZA[3]	20 20 20 10		
REED CANARY GRASS	20	X	X
REED CANARY GRASS BIRD'S–FOOT TREFOIL[3]	15 6	X	X
CROWN WETCH[3] AND TALL FESCUE OR RED FESCUE OR HARD FESCUE OR PERENNIAL RYEGRASS	20 20 20 20 20	X	
FLATPEA[3] AND TALL FESCUE OR RED FESCUE OR HARD FESCUE OR PERENNIAL RYEGRASS	40 20 20 20 20	X	
PERENNIAL PEA[3] AND TALL FESCUE OR RED FESCUE OR HARD FESCUE OR PERENNIAL RYEGRASS	40 20 20 20 20	X	
SWITCHGRASS[4] BIRD'S–FOOT TREFOIL[3] OR SERICEA LESPEDEZA[3]	10 6 10	X X X	X X
DEERTONGUE[4]	15	X	
DEERTONGUE[4] BIRD'S–FOOT TREFOIL[3] OR SERICEA LESPEDEZA[3]	15 6 10	X	

[1] USE THIS SPECIES LISTED IN TEMPORARY CRITICAL AREA PLANTING SPECIFICATIONS AS NURSE CROPS AT HALF THE RATE.

[2] CONSULT THE EXTENSION SERVICE FOR FORAGE AND TURF CULTIVAR RECOMMENDATIONS. OTHER SPECIES RECOMMENDATIONS: CROWN VETCH – 'PENNGIFT'; FLATPEA 'LATHCO'; PERRENIAL PEA 'LANCER'; SERICEA LESPEDEZA 'APPALOW'; DEERTONGUE 'TIOGA'; SWITCHGRASS 'BLACKWELL' (EROSION CONTROL), 'SHELTER' (WILDLIFE HABITAT), 'CAVE–IN–ROCK' (FORAGE).

[3] INOCULATE LEGUME SEEDS, USE FOUR TIMES THE NORMAL RATE WHEN HYDROSEEDING.

[4] USE THESE MIXTURES ON GENTLE, LESS EROSIVE SLOPES.

[5] "X" INBDICATED ACCEPTABLE SPECIES FOR CONDITION LISTED.

8. DATE OF SEEDING:
COOL SEASON GRASSES AND LEGUMES
OPTIMUM – MARCH 1 TO APRIL 15
EXTENDED – NOVEMBER 15 TO JUNE 15
AUGUST 15 TO SEPTEMBER 15

WARM SEASON GRASSES (SWITCHGRASS AND DEERTONGUE)
OPTIMUM – MARCH 1 TO APRIL 1
EXTENDED – DECEMBER 1 TO APRIL 15

9. AREAS WHERE THE SEED HAS FAILED TO GERMINATE ADEQUATELY (UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70%) WITHIN 30 DAYS AFTER SEEDING AND MULCHING MUST BE RESEEDED IMMEDIATELY, OR AS SOON AS WEATHER CONDITIONS ALLOW.

WOODY PLANTS:
WOODY PLANTS CAN BE USED FOR EROSION CONTROL ON AREAS WHERE LONG TERM STANDS AREDESIRED, MOWING AND FREQUENT FERTILIZATION CANNOT BE DONE, BARRIERS, WINDBREAKS, AND HEDGES ARE NEEDED AND ALSO FOR SHADE AND GENERAL IMPROVEMENT OF THE APPEARANCE OF THE AREA. RETAINING EXISTING DESIRABLE TREES IS AN IMPORTANT CONSIDERATION DURING SITE DEVELOPMENT. VINES ARE SUITABLE FOR SHORT, STEEP, OR ODD AREAS WHERE MOWING IS NOT FEASIBLE AND WHERE PERMANENT LOW–GROWING VEGETATION IS DESIRED.

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. DYER
REGISTERED
20884
STATE OF
PROFESSIONAL ENGINEER
7/28/25

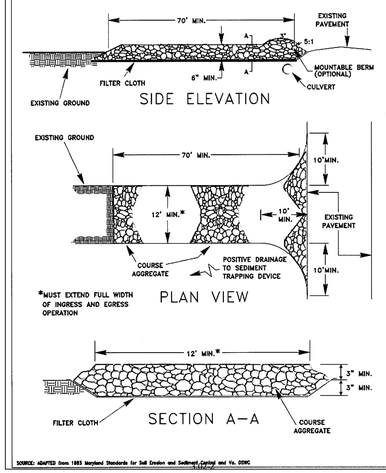
E&S CONTROL NARRATIVE

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

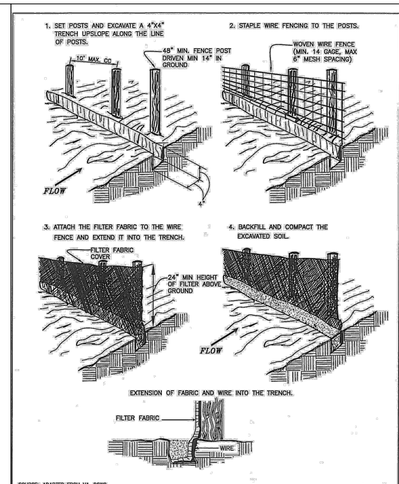
JOB NO.: 21115
SCALE: N/A
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 46 OF 71

FIGURE 3.02.1

STONE CONSTRUCTION ENTRANCE



SOURCE: ADAPTED from 1983 Maryland Standards for Soil Erosion and Sediment Control and Va. DSWC



SOURCE: ADAPTED FROM VA. DSWC

CITY OF RANSON	DWG. NO. ESC-002
SILT FENCE (WITH WIRE SUPPORT)	DATE 8/2002

FIGURE 3.28.1

SUPER SILT FENCE

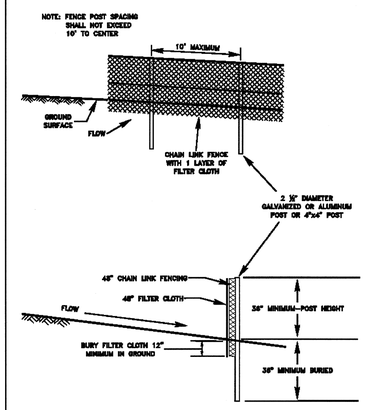
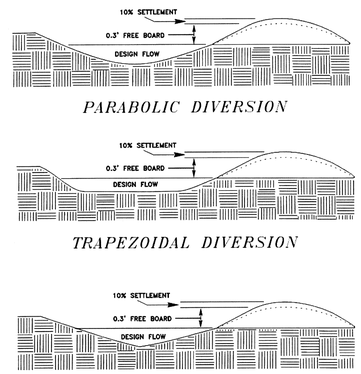


FIGURE 3.15.1

TYPICAL DIVERSIONS



Source: VIRGINIA DCR-DSWC

PROPOSED SEDIMENT BASIN #1

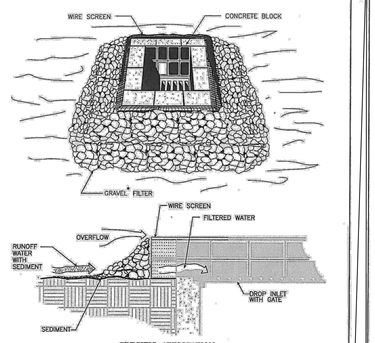
SEDIMENT BASIN #1	
DA	11.60
Wet Storage Required (cubic yards)	777
Wet Storage Provided (cubic yards)	1418.39
Dry Storage Required (cubic yards)	777
Dry Storage Provided (cubic yards)	1414.43
Cleanout Elevation	545.00
Embankment Elevation	554.00
Bottom Elevation	544.00
Design High Water Elevation	554.94
Principal Spillway Elevation	553.00
Dewatering Orifice Invert Elev.	553.00
Dewatering Orifice Diameter	0.00
Diameter of Flexible Tubing	2.00
Riser Diameter (inches)	72.00
Barrel Length (feet)	160.00
Barrel Diameter (inches)	18.00
Slope of Barrel (%)	0.50

PROPOSED SEDIMENT BASIN #2

SEDIMENT BASIN #1	
DA	14.35
Wet Storage Required (cubic yards)	961
Wet Storage Provided (cubic yards)	971.97
Dry Storage Required (cubic yards)	961
Dry Storage Provided (cubic yards)	967.88
Cleanout Elevation	552.00
Embankment Elevation	554.62
Bottom Elevation	549.00
Design High Water Elevation	556.16
Principal Spillway Elevation	553.62
Dewatering Orifice Invert Elev.	553.62
Dewatering Orifice Diameter	8.00
Diameter of Flexible Tubing	10.00
Riser Diameter (inches)	48.00
Barrel Length (feet)	35.94
Barrel Diameter (inches)	30.00
Slope of Barrel (%)	0.50

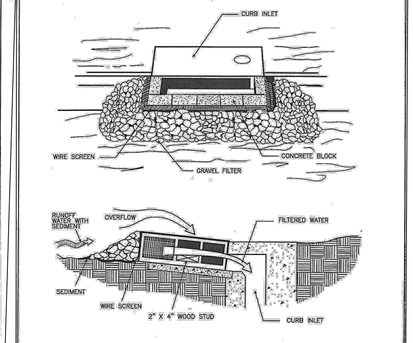
PROPOSED SEDIMENT TRAP #3A AND #3B

SEDIMENT TRAP DESIGN		
	3A	3B
DA	4.78	2.93
Wet Storage Required 67 cy/ac (cubic yards)	320	196
Wet Storage Provided (cubic yards)	339	198
Wet Storage Elevation	552.00	554.00
Dry Storage Required67 cy/ac (cubic yards)	320	196
Dry Storage Provided (cubic yards)	320	211
Dry Storage Elevation	554.00	554.00
Outlet Weir Width (ft)	29	18
Weir Elevation	552.00	554.00
Bottom Elevation	547.00	548.00
Cleanout Elevation	554.00	554.00
Storage Depth (ft)	5.00	6.00



SOURCE: ADAPTED FROM VA. DSWC

CITY OF RANSON	DWG. NO. ESC-005
BLOCK AND GRAVEL DROP INLET SEDIMENT FILTER	DATE 8/2002

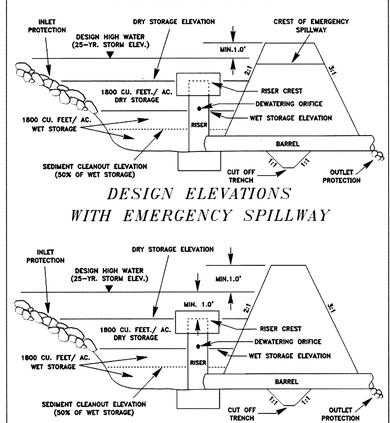


SOURCE: ADAPTED FROM VA. DSWC

CITY OF RANSON	DWG. NO. ESC-007
BLOCK & GRAVEL CURB INLET SEDIMENT FILTER	DATE 8/2002

FIGURE 3.30.2

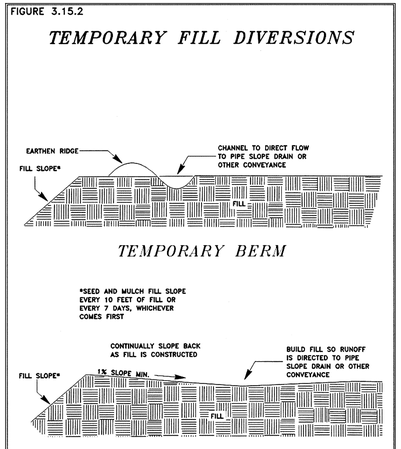
SEDIMENT BASIN

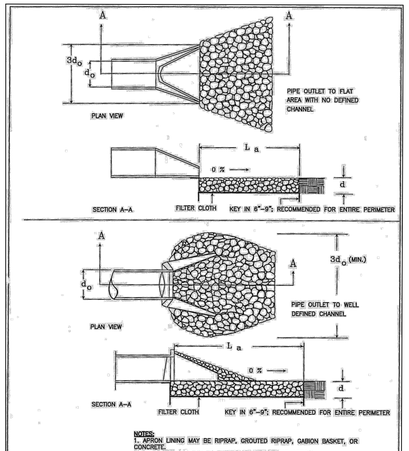


ADAPTED FROM: VA. DSWC

FIGURE 3.15.2

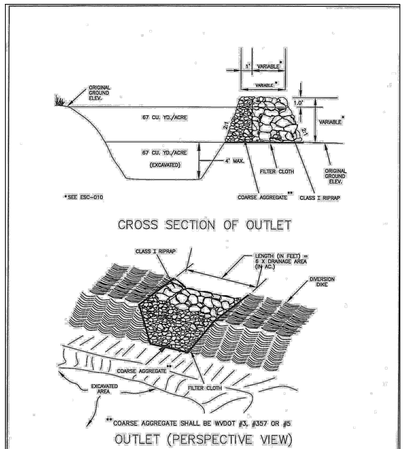
TEMPORARY FILL DIVERSIONS





SOURCE: ADAPTED FROM VA. DSWC

CITY OF RANSON	DWG. NO. ESC-020
CULVERT OUTLET PROTECTION	DATE: 8/2002



SOURCE: ADAPTED FROM VA. DSWC

CITY OF RANSON	DWG. NO. ESC-009
SEDIMENT TRAP	DATE: 8/2002

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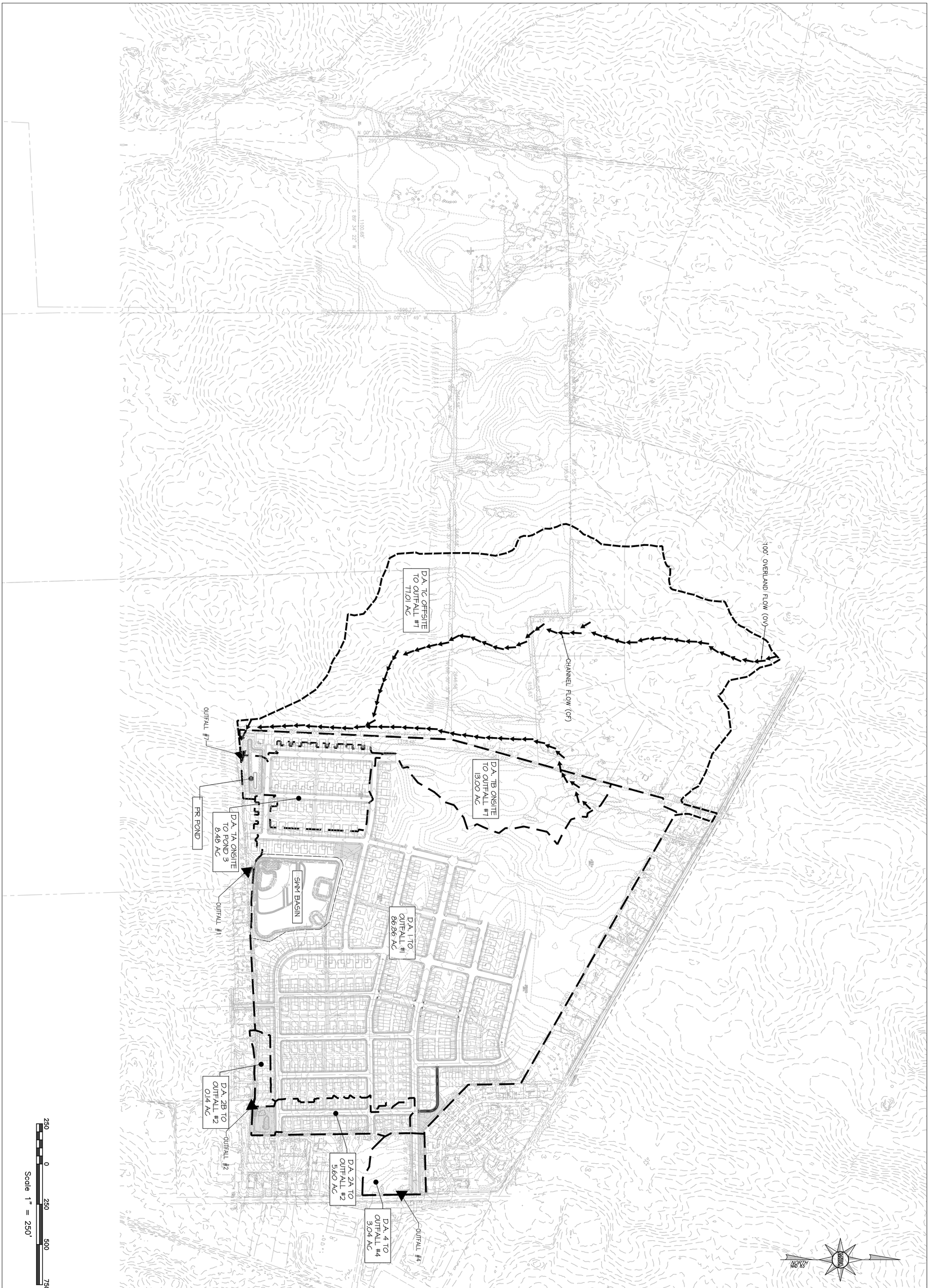
E&S CONTROL DETAILS

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	N/A
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	47 OF 71



PRE DEVELOPMENT DRAINAGE MAP

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: 1" = 250'
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 48 OF 71

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7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

POST DEVELOPMENT DRAINAGE MAP

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115

SCALE: 1" = 250'

DATE: 04/18/2025

DRAWN BY: KM/BZ

DESIGN BY: KM/BZ

REVIEW BY: RJD

SHEET: 49 OF 71

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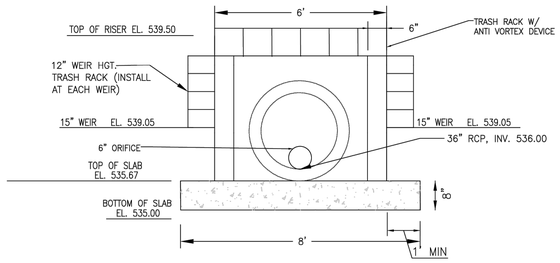
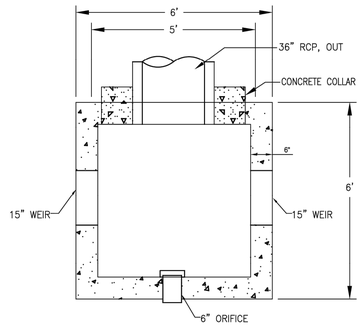
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS



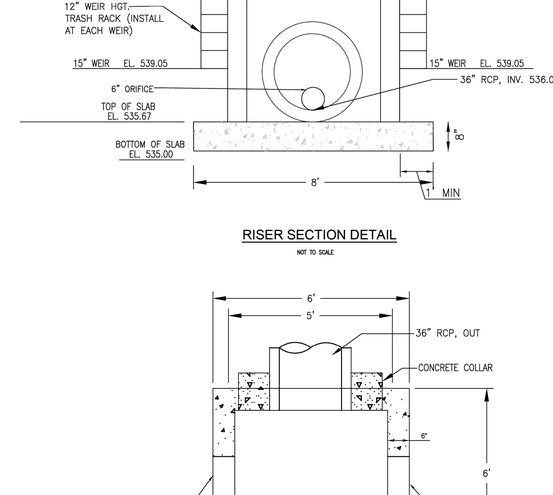
RISER SECTION DETAIL

NOT TO SCALE



RISER TOP DETAIL

NOT TO SCALE



RISER SECTION DETAIL

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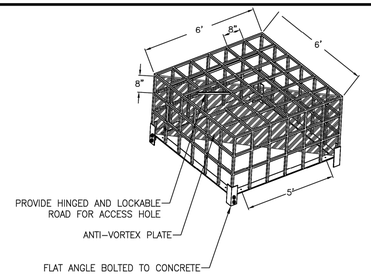
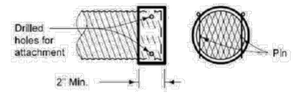
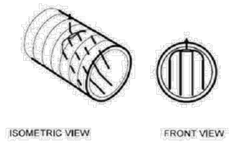


TRASH RACK DETAIL

(TOP OF RISER)



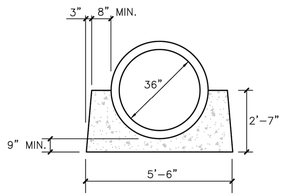
REMOVABLE GRATE



REMOVABLE FORK

RODENT GUARD DETAIL

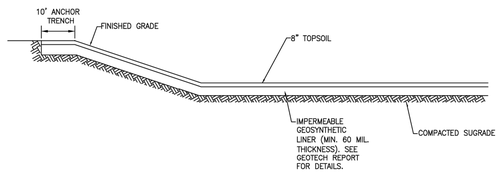
NOT TO SCALE



NOTES:
1. CRADLE TO BE CONTINUOUS ALONG PIPE.
2. CONCRETE FOR CRADLE TO BE MIX No. 3.

CONCRETE CRADLE DETAIL

N.T.S.



LINER DETAIL

N.T.S.

SWM NARRATIVE:

HUNTWELL WEST IS A MULTI-PHASE RESIDENTIAL SUBDIVISION LOCATED IN THE CITY OF RANSON. SECTION 1 CONSISTS OF THE CONSTRUCTION OF A TOTAL OF 146 SINGLE-FAMILY HOMES WITH ASSOCIATED ROADS, UTILITIES, AND STORMWATER MANAGEMENT LOCATED TO THE SOUTH OF OLD LEETOWN PIKE AND TO THE WEST OF N. MILDRED STREET. FROM SECTION 1, APPROXIMATELY 82.64 ACRES DRAIN TO THE OUTFALL #1, APPROXIMATELY 11.52 ACRES DRAIN TO THE OUTFALL #2, AND APPROXIMATELY 3.04 ACRES DRAIN TO THE OUTFALL #4, IN THE POST-DEVELOPED CONDITION.

A PORTION OF THE FUTURE DEVELOPMENT WILL DRAIN INTO THE PROPOSED SWM POND 1 TO OUTFALL #1. DRAINAGE AREA 1 COMPRISES THE MAJORITY OF THE FUTURE DEVELOPMENT, WITH APPROXIMATELY 82.64 ACRES ULTIMATELY DRAINING TO THE PROPOSED POND AT OUTFALL #1. THE TOTAL POST-DEVELOPED DRAINAGE AREA THAT ULTIMATELY DRAINS TO OUTFALL #1 IS 82.64 ACRES, TO OUTFALL # 2 IS 11.52 ACRES, AND TO OUTFALL # 4 IS 3.04 ACRES. SWM POND 1 WAS DESIGNED TO CAPTURE AND TREAT THE REQUIRED WATER QUALITY VOLUME FOR SECTION 1 AND FUTURE DEVELOPMENT OF THE PARCEL. SWM POND 2 WAS DESIGNED TO SOLELY CAPTURE AND TREAT THE REQUIRED WATER QUALITY VOLUME FOR SECTION 1. BOTH PONDS WERE ALSO DESIGNED TO TREAT WATER QUANTITY AND DISCHARGE AT A RATE BELOW THE PRE-DEVELOPED TARGET PEAK FLOWS.

WATER QUALITY

THE SWM FACILITIES HAVE BEEN DESIGNED TO CAPTURE THE 1 INCH 24 HOUR RAINFALL EVENT FOR SECTIONS 2, 3, AND FUTURE SECTIONS OF THE REMAINING PARCEL AREA. ROOFTOP DISCONNECTION IS UTILIZED FOR ALL ROOFTOP AREAS DRAINING TO REAR YARDS WITH ADEQUATE DISCONNECTION. THE PONDS PROVIDE THE REMAINING STORAGE AND DETAINS AND RELEASES IT OVER A 48 HOUR DRAWDOWN PERIOD.

WATER QUANTITY

BOTH PONDS HAVE BEEN DESIGNED TO RELEASE THE 2, 10, 25 AND 100 YEAR STORM EVENTS AT BELOW PRE-DEVELOPED FLOW RATES. RUNOFF GENERATED FROM SECTION 1 WILL BE COLLECTED IN UNDERGROUND PIPES THAT OUTFALL INTO THE SWM POND. FUTURE DEVELOPMENT WILL DIRECT WATER THROUGH UNDERGROUND PIPES AND WILL OUTFALL IN THE POND. EXISTING CONDITIONS AND KARST REDUCTION FACTOR WAS TAKEN INTO ACCOUNT FOR DETERMINING THE REQUIRED TARGET POST-DEVELOPED PEAK DISCHARGE.

A SUMMARY TABLE OF RUNOFF AND VOLUME FOR THE 24 HOUR STORM EVENTS HAS BEEN PROVIDED ON THIS SHEET.

THE EXTENDED DETENTION PONDS REDUCED THE POST-DEVELOPED PEAK DISCHARGE RATE TO BELOW THE TARGET DISCHARGE RATES. BASED ON REDUCING THE POST-DEVELOPED PEAK FLOWS TO THE TARGET PRE-DEVELOPED PEAK FLOWS STORMWATER MANAGEMENT HAS BEEN MET.

SEE THE SWM REPORT FOR DETAILED CALCULATIONS.

SWM Sizing & Discharge Summary Table - Outfall #1

Stormwater Quality

Required:	196,966	cfs
Provided:	199,030	cfs

*Includes storage for Outfall #4 WQV

Stormwater Quantity Discharge Summary

	2-YR		10-YR		25-YR		100-YR	
	Discharge (cfs)	WSE (ft)	Discharge (cfs)	WSE (ft)	Discharge (cfs)	WSE (ft)	Discharge (cfs)	WSE (ft)
Pre-developed (Target Flow	21.78	N/A	57.37	N/A	81.92	N/A	134.74	N/A
Post-developed	4.17	539.50	51.36	540.15	81.80	540.90	129.39	542.20

SWM Sizing & Discharge Summary Table- Outfall #2

Stormwater Quality

Required:	12,093	cfs
Provided:	12,421	cfs

Stormwater Quantity Discharge Summary

	2-YR		10-YR		25-YR		100-YR	
	cfs	WSE (ft)	cfs	WSE (ft)	cfs	WSE (ft)	cfs	WSE (ft)
Pre-developed (Target Flow)	2.51	N/A	6.52	N/A	9.27	N/A	15.17	N/A
Post-developed DA #2B (Pond #2)	0.70	559.09	4.33	559.95	7.55	560.49	14.42	561.37
Total Post-developed Outfall #2	0.73	N/A	4.42	N/A	7.67	N/A	14.62	N/A

MAINTENANCE

MAINTENANCE SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:

1. THE SWM FACILITY SHALL BE INSPECTED ON A SEMI-ANNUAL BASIS AND AFTER ANY STORM WHICH CAUSES THE CAPACITY OF THE FACILITY TO BE EXCEEDED. ANY TRASH AND/OR DEBRIS WITHIN THE FACILITY SHALL BE REMOVED AND PROPERTY DISPOSED OF.
2. THE SWM FACILITY SHOULD BE PERIODICALLY CLEANED OUT EVERY 5-10 YEARS DEPENDING ON SEDIMENT LOADING, SO AS TO REESTABLISH THE ORIGINAL PROPOSED CONTOURS AS SHOWN ON THE PLAN. ALL EXCAVATED AND/OR DREDGE MATERIAL SHALL BE PLACED IN COMMON SPACES AS DESIGNATED BY THE OWNER. THE DISPOSAL AREA SHALL HAVE APPROPRIATE E&S CONTROLS AND SHALL BE IMMEDIATELY STABILIZED.
3. THE EMBANKMENT SHOULD BE MOWED PERIODICALLY DURING THE GROWING SEASON, ENSURING THE LAST CUTTING OCCURS AT THE END OF THE SEASON. THE GRASS SHOULD NOT BE CUT LESS THAN 6 TO 8 INCHES IN HEIGHT.
4. IF NECESSARY, THE EMBANKMENT SHOULD BE LIMED, FERTILIZED AND SEEDED IN THE FALL AFTER THE GROWING SEASON. LIME AND FERTILIZER APPLICATION RATES SHOULD BE BASED ON SOIL TEST RESULTS.
5. ALL EROSION GULLIES NOTED DURING THE GROWING SEASON SHOULD BE BACKFILLED WITH TOPSOIL, RESEEDED AND PROTECTED (MULCHED) UNTIL VEGETATION IS ESTABLISHED.
6. ALL BARE AREAS AND PATHWAYS ON THE EMBANKMENT SHOULD BE PROPERLY SEEDED AND PROTECTED (MULCHED) OR OTHERWISE STABILIZED.
7. ALL ANIMAL BURROWS SHOULD BE BACKFILLED AND COMPACTED AND BURROWING ANIMALS SHOULD BE REMOVED FROM THE AREA.
8. ALL TREES, WOODY VEGETATION AND OTHER DEEP-ROOTED GROWTH, INCLUDING STUMPS AND ROOT SYSTEMS SHOULD BE REMOVED FROM THE EMBANKMENT AND ADJACENT AREAS EXTENDING TO AT LEAST 25 FEET BEYOND THE EMBANKMENT TOE AND ABUTMENT CONTACTS. THE ROOT SYSTEMS SHOULD BE EXTRACTED AND EXCAVATED VOLUME REPLACED AND COMPACTED WITH SIMILAR MATERIAL TO THE SURROUNDING AREA. ALL SEEDLINGS SHOULD BE REMOVED AT THE FIRST OPPORTUNITY. ANY VINE COVER AND BRUSH SHOULD BE REMOVED FROM THE EMBANKMENT TO ALLOW FOR INSPECTIONS
9. ANY REPAIRS MADE TO THE PRINCIPAL SPILLWAY SHOULD BE REVIEWED BY A PROFESSIONAL ENGINEER.

CUT-OFF TRENCH & IMPERVIOUS CORE NOTES

1. A CUT-OFF TRENCH OF RELATIVELY IMPERVIOUS MATERIAL SHALL BE PROVIDED UNDER THE ENTIRE LENGTHEN OF THE EMBANKMENT AND SHALL BE LOCATED AT OR UPSTREAM FROM THE CENTERLINE OF THE EMBANKMENT. THE CUT-OFF TRENCH SHALL HAVE A MINIMUM WIDTH OF 4 FEET AND SHALL HAVE SIDE SLOPES NO STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL WITH A MINIMUM DEPTH OF 4 FEET.
2. ANY IMPERVIOUS CORE WITHIN THE EMBANKMENT SHALL BE LOCATED AT OR UPSTREAM FROM THE CENTERLINE OF THE EMBANKMENT AND SHALL EXTEND UP FROM THE ABUTMENTS OF THE 25-YEAR WATER SURFACE ELEVATION. THE IMPERVIOUS CORE SHALL EXTEND VERTICALLY FROM THE CUT-OFF TRENCH UP TO THE 25-YEAR WATER SURFACE ELEVATION THROUGHOUT THE EMBANKMENT.

FOR REFERENCE ONLY

DATE	REVISIONS
07/20/21	REVISED PER CTUB COMMENTS
07/29/21	REVISED PER CITY AND CTUB COMMENTS
09/16/21	REVISED PER CITY COMMENTS
12/08/21	REVISED PER CITY & WVDOH COMMENTS
02/24/22	REVISED PER CITY COMMENTS
03/30/22	REVISED PER CITY COMMENTS

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SWM POND 1 NARRATIVE AND DETAILS

HUNTWELL WEST
VILLAGE 1 - PHASE 1
CONSTRUCTION DRAWINGS
CITY OF RANSON, WV

JOB NO.: 21115
SCALE: N/A
DATE: 06/23/2021
DRAWN BY: CSC
DESIGN BY: DEM
REVIEW BY: JKE
SHEET: 51 OF 76

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. BYRNE REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

J. ERICKSON REGISTERED PROFESSIONAL ENGINEER STATE OF WEST VIRGINIA 03/30/2022

SWM POND 1 REFERENCE SHEET

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 50 OF 71

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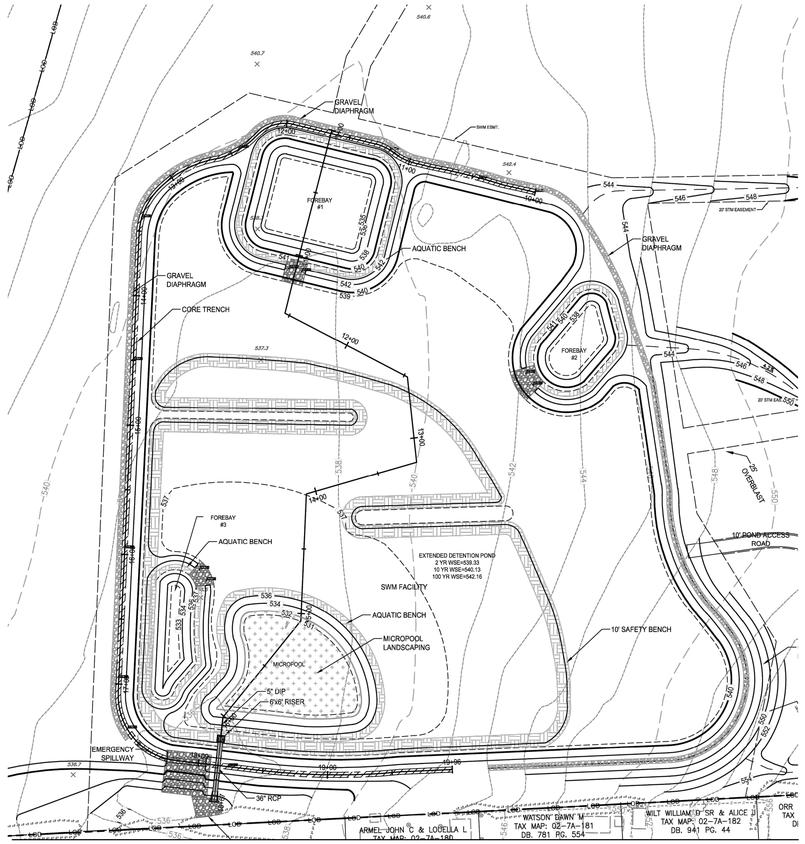
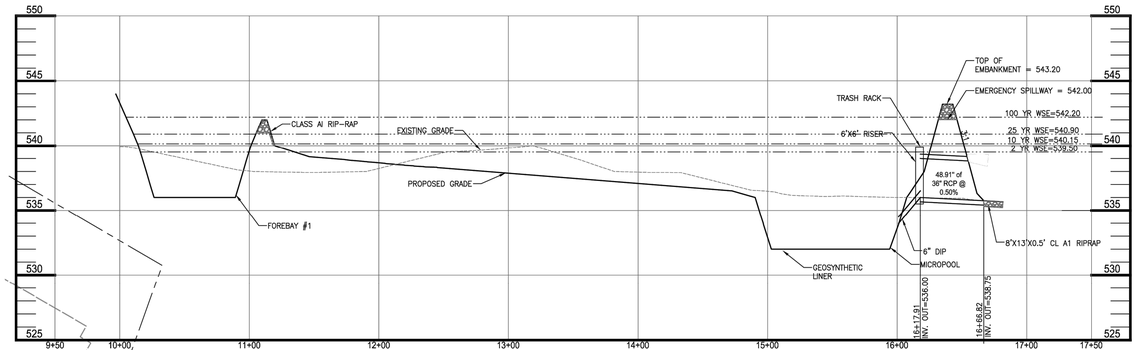


SWM POND 1 DETAIL
SCALE: 1"=50'



EXTENDED DETENTION POND #1 PROFILE
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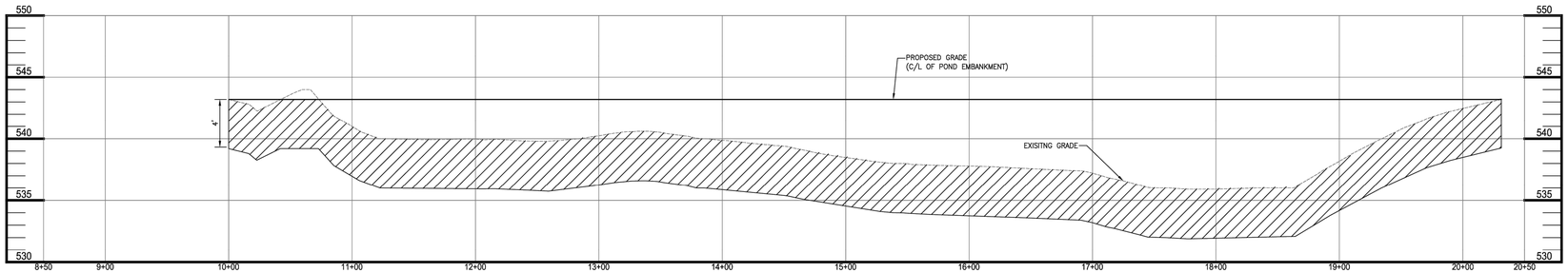
V: X



CORE TRENCH #1 PROFILE
SCALE: H: 1"=50'
V: X

FOR REFERENCE ONLY

DATE	REVISIONS
07/20/21	REVISED PER CTUB COMMENTS
07/29/21	REVISED PER CITY AND CTUB COMMENTS
09/16/21	REVISED PER CITY COMMENTS
12/08/21	REVISED PER CITY & WVDOH COMMENTS
02/24/22	REVISED PER CITY COMMENTS
03/30/22	REVISED PER CITY COMMENTS

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SWM POND 1 DETAILS
HUNTWELL WEST
VILLAGE 1 - PHASE 1
CONSTRUCTION DRAWINGS
CITY OF RANSON, WV

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	06/23/2021
DRAWN BY:	CSC
DESIGN BY:	DEM
REVIEW BY:	JKE
SHEET:	52 OF 76

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. PYSELL
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

SWM POND 1 REFERENCE SHEET
HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	51 OF 71

L:\Projects\Huntwell West\Phase 1 Plan\Plan Sheets\SWM NARRATIVE & DETAILS.dwg, 4/12/2022 3:42:38 PM, MClark,
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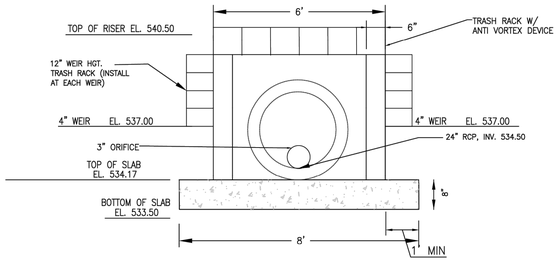
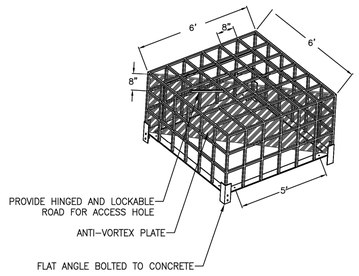


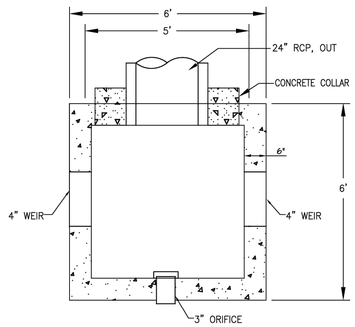
RISER SECTION DETAIL

NOT TO SCALE



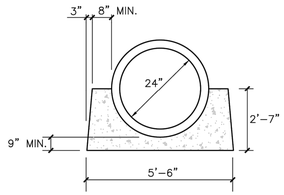
TRASH RACK DETAIL

(TOP OF RISER)



RISER TOP DETAIL

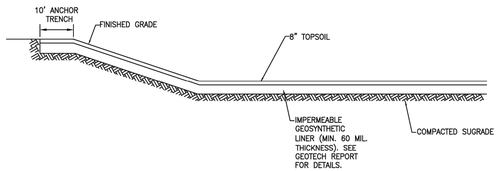
NOT TO SCALE



NOTES:
1. CRADLE TO BE CONTINUOUS ALONG PIPE.
2. CONCRETE FOR CRADLE TO BE MIX No. 3.

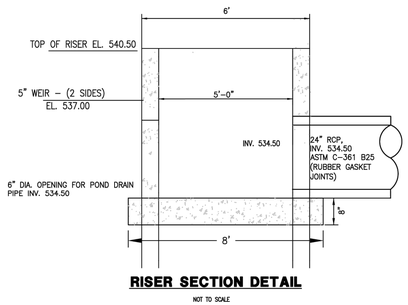
CONCRETE CRADLE DETAIL

N.T.S.



LINER DETAIL

N.T.S.



RISER SECTION DETAIL

NOT TO SCALE

SWM NARRATIVE:

HUNTWELL WEST IS A MULTI-PHASE RESIDENTIAL SUBDIVISION LOCATED IN THE CITY OF RANSON. SECTION 2 CONSISTS OF THE CONSTRUCTION OF 142 SINGLE-FAMILY DETACHED HOMES AND 100 SINGLE FAMILY ATTACHED HOMES WITH ASSOCIATED ROADS, UTILITIES, AND STORMWATER MANAGEMENT LOCATED TO THE SOUTH OF OLD LEETOWN PIKE AND TO THE WEST OF N. MILDRED STREET. FROM SECTION 2, APPROXIMATELY 96.81 ACRES DRAIN TO OUTFALL #1, APPROXIMATELY 11.55 ACRES ONSITE AND 77.01 ACRES OF OFFSITE STORM WATER DRAINS TO OUTFALL #7 IN THE POST-DEVELOPED CONDITION.

A PORTION OF THE FUTURE DEVELOPMENT WILL DRAIN INTO THE PROPOSED SWM POND 1 TO OUTFALL #1. DRAINAGE AREA 1 COMPRISES THE MAJORITY OF THE PROPOSED DEVELOPMENT, WITH APPROXIMATELY 96.81 ACRES ULTIMATELY DRAINING TO THE PROPOSED POND AT OUTFALL #1. THE TOTAL POST-DEVELOPED DRAINAGE AREA THAT ULTIMATELY DRAINS TO OUTFALL #1 IS 96.81 ACRES, TO OUTFALL # 2 IS 5.74 ACRES, TO OUTFALL # 4 IS 3.04 ACRES. AND TO OUTFALL #7 IS 88.56 ACRES. SWM POND 1 WAS DESIGNED TO CAPTURE AND TREAT THE REQUIRED WATER QUALITY VOLUME FOR SECTION 1 & 2 AND FUTURE DEVELOPMENT OF THE PARCEL. SWM POND 2 WAS DESIGNED TO SOLELY CAPTURE AND TREAT THE REQUIRED WATER QUALITY VOLUME FOR SECTION 1. SWM POND #3 WAS DESIGNED TO SOLELY CAPTURE AND TREAT THE REQUIRED WATER QUALITY VOLUYME FOR SECTION 2. ALL PONDS WERE ALSO DESIGNED TO TREAT WATER QUANTITY AND DISCHARGE AT A RATE BELOW THE PRE-DEVELOPED TARGET PEAK FLOWS.

WATER QUALITY

THE SWM FACILITIES HAVE BEEN DESIGNED TO CAPTURE THE 1 INCH 24 HOUR RAINFALL EVENT FOR SECTIONS 2, 3, AND FUTURE SECTIONS OF THE REMAINING PARCEL AREA. ROOFTOP DISCONNECTION IS UTILIZED FOR ALL ROOFTOP AREAS DRAINING TO REAR YARDS WITH ADEQUATE DISCONNECTION. THE PONDS PROVIDES THE REMAINING STORAGE AND DETAINS AND RELEASES IT OVER A 48 HOUR DRAWNDOWN PERIOD.

WATER QUANTITY

BOTH PONDS HAVE BEEN DESIGNED TO RELEASE THE 2, 10, AND 100 YEAR STORM EVENTS AT BELOW PRE-DEVELOPED FLOW RATES. RUNOFF GENERATED FROM SECTION 2 WILL BE COLLECTED IN UNDERGROUND PIPES THAT OUTFALL INTO SWM PONDS #1 & 3. FUTURE DEVELOPMENT WILL DIRECT WATER THROUGH UNDERGROUND PIPES AND WILL OUTFALL IN THE POND. EXISTING CONDITIONS AND KARST REDUCTION FACTOR WAS TAKEN INTO ACCOUNT FOR DETERMINING THE REQUIRED TARGET POST-DEVELOPED PEAK DISCHARGE.

A SUMMARY TABLE OF RUNOFF AND VOLUME FOR THE 24 HOUR STORM EVENTS HAS BEEN PROVIDED ON THIS SHEET.

THE EXTENDED DETENTION PONDS REDUCED THE POST-DEVELOPED PEAK DISCHARGE RATE TO BELOW THE TARGET DISCHARGE RATES. BASED ON REDUCING THE POST-DEVELOPED PEAK FLOWS TO THE TARGET PRE-DEVELOPED PEAK FLOWS. STORMWATER MANAGEMENT HAS BEEN MET.

SEE THE SWM REPORT FOR DETAILED CALCULATIONS.

SWM Sizing & Discharge Summary Table - Outfall #7

Stormwater Quality

Required:	27,254	cfs
Provided:	37,037	cfs

*includes storage for Outfall #7 WQV

Stormwater Quantity Discharge Summary

	2-YR		10-YR		25-YR		100-YR	
	Discharge (cfs)	WSE (ft)	Discharge (cfs)	WSE (ft)	Discharge (cfs)	WSE (ft)	Discharge (cfs)	WSE (ft)
Pre-developed (Target Flow)	12.91	N/A	63.98	N/A	110.87	N/A	202.61	N/A
Post-developed	12.81	537.00	60.39	538.99	105.53	539.83	199.86	541.14

MAINTENANCE

MAINTENANCE SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:

1. THE SWM FACILITY SHALL BE INSPECTED ON A SEMI-ANNUAL BASIS AND AFTER ANY STORM WHICH CAUSES THE CAPACITY OF THE FACILITY TO BE EXCEEDED. ANY TRASH AND/OR DEBRIS WITHIN THE FACILITY SHALL BE REMOVED AND PROPERTY DISPOSED OF.
2. THE SWM FACILITY SHOULD BE PERIODICALLY CLEANED OUT EVERY 5-10 YEARS DEPENDING ON SEDIMENT LOADING, SO AS TO REESTABLISH THE ORIGINAL PROPOSED CONTOURS AS SHOWN ON THE PLAN. ALL EXCAVATED AND/OR DREDGE MATERIAL SHALL BE PLACED IN COMMON SPACES AS DESIGNATED BY THE OWNER. THE DISPOSAL AREA SHALL HAVE APPROPRIATE E&S CONTROLS AND SHALL BE IMMEDIATELY STABILIZED.
3. THE EMBANKMENT SHOULD BE MOWED PERIODICALLY DURING THE GROWING SEASON, ENSURING THE LAST CUTTING OCCURS AT THE END OF THE SEASON. THE GRASS SHOULD NOT BE CUT LESS THAN 6 TO 8 INCHES IN HEIGHT.
4. IF NECESSARY, THE EMBANKMENT SHOULD BE LIMED, FERTILIZED AND SEEDED IN THE FALL AFTER THE GROWING SEASON. LIME AND FERTILIZER APPLICATION RATES SHOULD BE BASED ON SOIL TEST RESULTS.
5. ALL EROSION GULLIES NOTED DURING THE GROWING SEASON SHOULD BE BACKFILLED WITH TOPSOIL, RESEEDED AND PROTECTED (MULCHED) UNTIL VEGETATION IS ESTABLISHED.
6. ALL BARE AREAS AND PATHWAYS ON THE EMBANKMENT SHOULD BE PROPERLY SEEDED AND PROTECTED (MULCHED) OR OTHERWISE STABILIZED.
7. ALL ANIMAL BURROWS SHOULD BE BACKFILLED AND COMPACTED AND BURROWING ANIMALS SHOULD BE REMOVED FROM THE AREA.
8. ALL TREES, WOODY VEGETATION AND OTHER DEEP-ROOTED GROWTH, INCLUDING STUMPS AND ROOT SYSTEMS SHOULD BE REMOVED FROM THE EMBANKMENT AND ADJACENT AREAS EXTENDING TO AT LEAST 25 FEET BEYOND THE EMBANKMENT TOE AND ABUTMENT CONTACTS. THE ROOT SYSTEMS SHOULD BE EXTRACTED AND EXCAVATED VOLUME REPLACED AND COMPACTED WITH SIMILAR MATERIAL TO THE SURROUNDING AREA. ALL SEEDLINGS SHOULD BE REMOVED AT THE FIRST OPPORTUNITY. ANY VINE COVER AND BRUSH SHOULD BE REMOVED FROM THE EMBANKMENT TO ALLOW FOR INSPECTIONS
9. ANY REPAIRS MADE TO THE PRINCIPAL SPILLWAY SHOULD BE REVIEWED BY A PROFESSIONAL ENGINEER.

CUT-OFF TRENCH & IMPERVIOUS CORE NOTES

1. A CUT-OFF TRENCH OF RELATIVELY IMPERVIOUS MATERIAL SHALL BE PROVIDED UNDER THE ENTIRE LENGTHEN OF THE EMBANKMENT AND SHALL BE LOCATED AT OR UPSTREAM FROM THE CENTERLINE OF THE EMBANKMENT. THE CUT-OFF TRENCH SHALL HAVE A MINIMUM WIDTH OF 4 FEET AND SHALL HAVE SIDE SLOPES NO STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL WITH A MINIMUM DEPTH OF 4 FEET.
2. ANY IMPERVIOUS CORE WITHIN THE EMBANKMENT SHALL BE LOCATED AT OR UPSTREAM FROM THE CENTERLINE OF THE EMBANKMENT AND SHALL EXTEND UP FROM THE ABUTMENTS OF THE 25-YEAR WATER SURFACE ELEVATION. THE IMPERVIOUS CORE SHALL EXTEND VERTICALLY FROM THE CUT-OFF TRENCH UP TO THE 25-YEAR WATER SURFACE ELEVATION THROUGHOUT THE EMBANKMENT.

FOR REFERENCE ONLY

DATE	REVISIONS
06/14/24	CITY OF RANSON AND CTUB COMMENTS
06/25/24	2ND SUBMISSION TO AMERICAN WATER
06/27/24	2ND SUBMISSION TO CTUB
07/01/24	CITY OF RANSON COMMENTS
07/10/24	WV AMERICAN WATER COMMENTS

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RICHARD J. DEBOY, REGISTERED, 20884, STATE OF WEST VIRGINIA, PROFESSIONAL ENGINEER
07/12/2024

SWM POND 3 NARRATIVE AND DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 2
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	N/A
DATE:	04/30/2024
DRAWN BY:	KM
DESIGN BY:	MJ
REVIEW BY:	JKE
SHEET:	54 OF 74

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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7/28/2025

SWM POND 3 REFERENCE SHEET

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	52 OF 71

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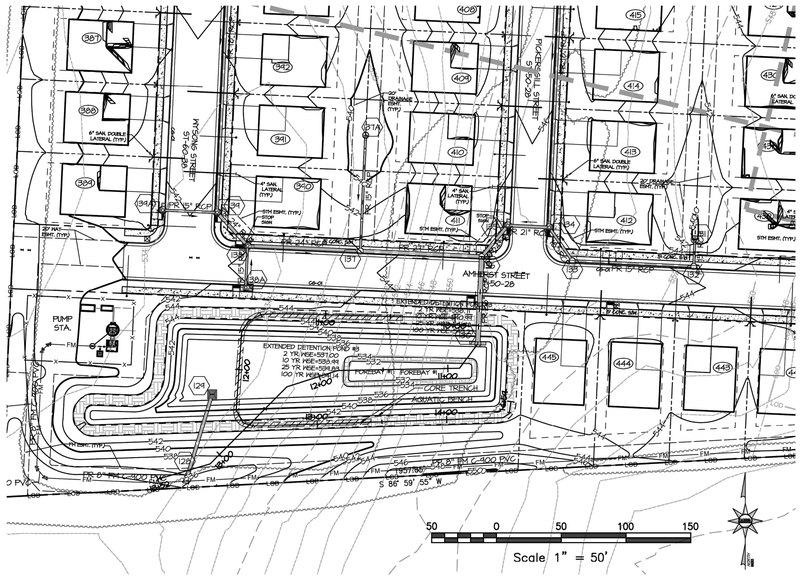

SWM POND 3 DETAIL
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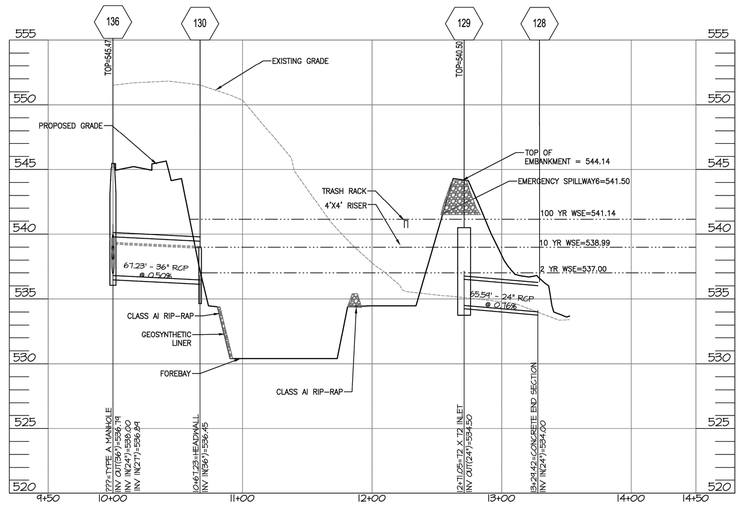
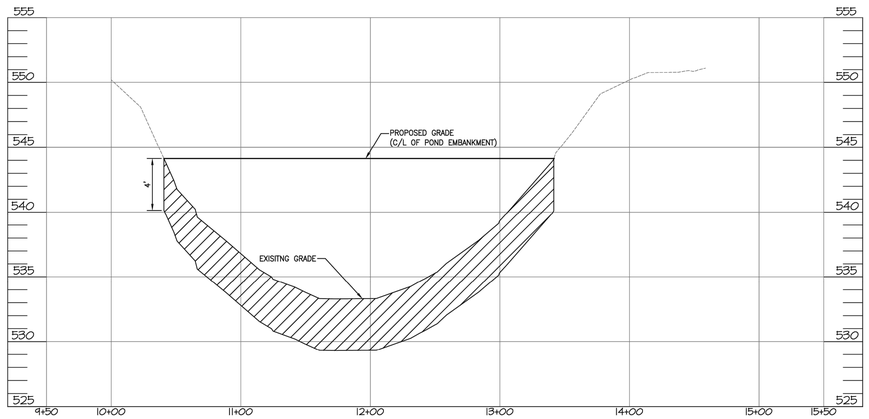


EXTENDED DETENTION POND #3 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



CORE TRENCH #3 PROFILE
SCALE: H: 1"=50'
V: 1"=5'

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DATE	REVISIONS
06/14/24	CITY OF RANSON AND CTUB COMMENTS
06/25/24	2ND SUBMISSION TO AMERICAN WATER
06/27/24	2ND SUBMISSION TO CTUB
07/01/24	CITY OF RANSON COMMENTS
07/10/24	WV AMERICAN WATER COMMENTS

RICHARD J. IVEY
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
07/12/2024

SWM POND 3 DETAILS
HUNTWELL WEST
VILLAGE 1- PHASE 2
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/30/2024
DRAWN BY: KM
DESIGN BY: MJ
REVIEW BY: JKE
SHEET: 55 OF 74

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DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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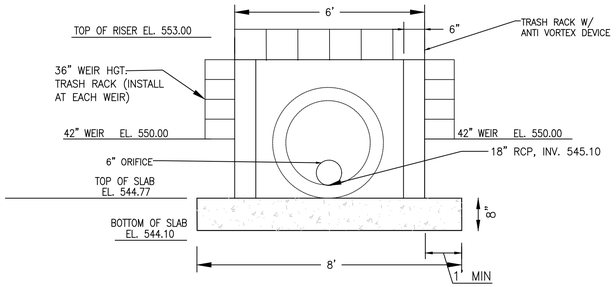
SWM POND 3 REFERENCE SHEET
HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 53 OF 71

C:\Projects\Huntwell West\Phase 3\Plan Sheets\SWM\SWM 3 DETAILS.dwg, 6/27/2024 10:57:01 AM, AutoCAD PDF (General Documentation).pc3



RISER SECTION DETAIL

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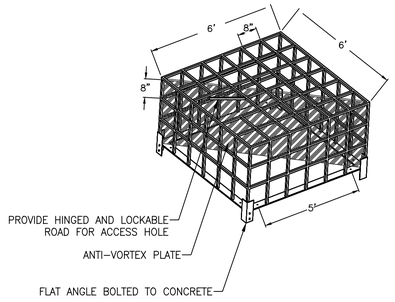
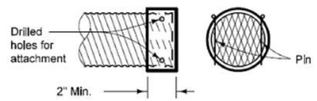
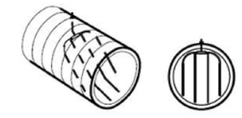


TRASH RACK DETAIL

(TOP OF RISER)



REMOVABLE GRATE



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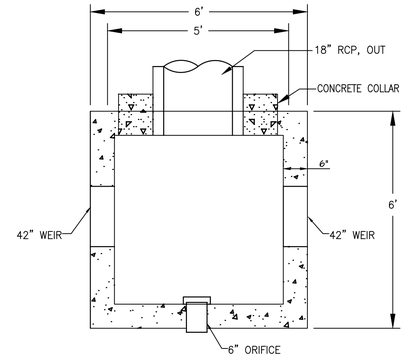

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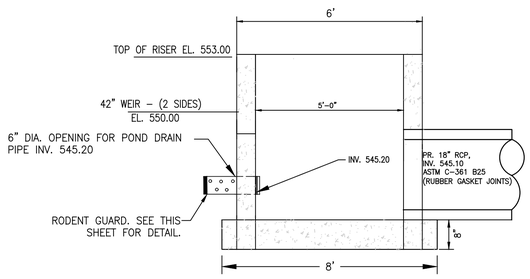
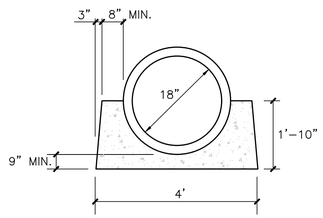


RISER SECTION DETAIL

NOT TO SCALE

RODENT GUARD DETAIL

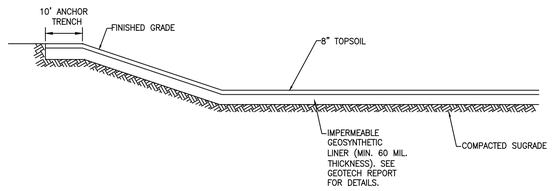
NOT TO SCALE



NOTES:
1. CRADLE TO BE CONTINUOUS ALONG PIPE.
2. CONCRETE FOR CRADLE TO BE MIX No. 3.

CONCRETE CRADLE DETAIL

N.T.S.



LINER DETAIL

N.T.S.

SWM NARRATIVE:

HUNTWELL WEST IS A MULTI-PHASE RESIDENTIAL SUBDIVISION LOCATED IN THE CITY OF RANSON. SECTION 3 CONSISTS OF THE CONSTRUCTION OF A TOTAL OF 215 SINGLE-FAMILY HOMES WITH ASSOCIATED ROADS, UTILITIES, AND STORMWATER MANAGEMENT LOCATED TO THE SOUTH OF OLD LEETOWN PIKE AND TO THE WEST OF N. MILDRED STREET. FROM SECTION 3, APPROXIMATELY 25.55 ACRES DRAIN TO OUTFALL #1, AND APPROXIMATELY 14.96 ACRES DRAIN TO OUTFALL #7, IN THE POST-DEVELOPED CONDITION.

PREVIOUSLY APPROVED SECTIONS 1 AND 2 ACCOUNTED FOR A PORTION OF THE FUTURE DEVELOPMENT TO DRAIN INTO THE EXISTING SWM POND 1 AND OUT TOWARDS OUTFALL #1. DRAINAGE AREA 1 COMPRISES THE MAJORITY OF THE EXISTING DEVELOPMENT, WITH APPROXIMATELY 85.04 ACRES ULTIMATELY DRAINING TO THE EXISTING POND AT OUTFALL #1, 25.55 ACRES OF WHICH ORIGINATE IN SECTION 3. SWM POND 1 WAS DESIGNED TO CAPTURE AND TREAT THE REQUIRED WATER QUALITY VOLUME FOR SECTION 1 AND FUTURE DEVELOPMENT OF THE PARCEL. SWM POND 1 WAS ALSO DESIGNED TO TREAT WATER QUANTITY AND DISCHARGE AT A RATE BELOW THE PRE-DEVELOPED TARGET PEAK FLOWS.

SIMILARLY, OUTFALL #7 WAS PREVIOUSLY DESIGNED TO ACCOUNT FOR FUTURE DEVELOPMENT. POST-DEVELOPMENT CONDITIONS SEND APPROXIMATELY 100.45 ACRES, BOTH ON- AND OFF-SITE DRAINAGE, TO OUTFALL #7 EITHER DIRECTLY OR INDIRECTLY THROUGH THE USE OF STORMWATER MANAGEMENT FACILITIES. OUTFALL #7 RECEIVES APPROXIMATELY 14.96 ACRES FROM PROPOSED SECTION 3, 8.48 ACRES FROM SECTION 2, AND 77.01 ACRES FROM EXISTING OFFSITE RUNOFF.

WATER QUALITY

THE SWM FACILITIES HAVE BEEN DESIGNED TO CAPTURE THE 1 INCH 24 HOUR RAINFALL EVENT FOR SECTION 3. ROOFTOP DISCONNECTION IS UTILIZED FOR ALL ROOFTOP AREAS DRAINING TO REAR YARDS WITH ADEQUATE DISCONNECTION. BOTH THE PROPOSED AND EXISTING STORMWATER MANAGEMENT PONDS PROVIDE THE REMAINING STORAGE REQUIRED; AS WELL AS DETAINING AND RELEASING STORAGE OVER A 48 HOUR DRAWDOWN PERIOD.

WATER QUANTITY

STORMWATER MANAGEMENT POND #5 HAS BEEN DESIGNED TO RELEASE THE 2, 10, 25 AND 100 YEAR STORM EVENTS AT BELOW PRE-DEVELOPED FLOW RATES. RUNOFF GENERATED FROM SECTION 3 WILL BE COLLECTED IN UNDERGROUND PIPES THAT OUTFALL INTO STORMWATER MANAGEMENT POND #4 OR POND #1. PREVIOUSLY APPROVED PLANS ANALYZED POTENTIAL RUNOFF CONDITIONS ASSOCIATED WITH THE DEVELOPMENT OF SECTION 3, SUPPORTING COMPUTATIONS HAVE BEEN PERFORMED AND PROVIDED DEMONSTRATING ADEQUACY AND COHESION OF BOTH THE EXISTING AND PROPOSED SITE STORMWATER INFRASTRUCTURE. EXISTING CONDITIONS AND KARST REDUCTION FACTORS ARE INCLUDED IN THE ANALYSIS FOR DETERMINING ADEQUATE POST-DEVELOPED PEAK DISCHARGE.

THE EXTENDED DETENTION PONDS REDUCED THE POST-DEVELOPED PEAK DISCHARGE RATE TO BELOW THE TARGET DISCHARGE RATES. BASED ON REDUCING THE POST-DEVELOPED PEAK FLOWS TO THE TARGET PRE-DEVELOPED PEAK FLOWS, ADJUSTED FOR KARST TERRAIN SITE CONDITIONS, STORMWATER MANAGEMENT HAS BEEN MET.

SEE THE ASSOCIATED SECTION 3 STORMWATER MANAGEMENT REPORT FOR DETAILED CALCULATIONS AND FURTHER ANALYSIS.

Phase 3 On-site Target Release Flows for Stormwater Design in Karst Area

Storm Event	Pre-Development Peak Discharge (cfs)	100% Karst Reduction Factor	Target Outflow (cfs)	Post-Development Peak Discharge (cfs)
2 YR	16.23	0.33	5.36	2.197
10 YR	71.52	0.43	30.75	5.145
25 YR	121.69	0.45	54.76	16.77
100 YR	219.64	0.50	109.82	21.91

Total Received Discharge at Outfall #1				
	2-yr cfs	10-yr cfs	25-yr cfs	100-yr cfs
Pre-Developed	2.101	19.51	55.79	95.78
Post-Developed	1.870	16.42	51.12	89.93
Total Received Discharge at Outfall #7				
	2-yr cfs	10-yr cfs	25-yr cfs	100-yr cfs
Pre-Developed	16.53	71.97	123.44	229.68
Post-Developed	13.88	61.95	116.77	212.54

*Adequate outfall reduction is satisfied for all storm events

MAINTINENCE

MAINTENANCE SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:

1. THE SWM FACILITY SHALL BE INSPECTED ON A SEMI-ANNUAL BASIS AND AFTER ANY STORM WHICH CAUSES THE CAPACITY OF THE FACILITY TO BE EXCEEDED. ANY TRASH AND/OR DEBRIS WITHIN THE FACILITY SHALL BE REMOVED AND PROPERTY DISPOSED OF.
2. THE SWM FACILITY SHOULD BE PERIODICALLY CLEANED OUT EVERY 5-10 YEARS DEPENDING ON SEDIMENT LOADING, SO AS TO REESTABLISH THE ORIGINAL PROPOSED CONTOURS AS SHOWN ON THE PLAN. ALL EXCAVATED AND/OR DREDGE MATERIAL SHALL BE PLACED IN COMMON SPACES AS DESIGNATED BY THE OWNER. THE DISPOSAL AREA SHALL HAVE APPROPRIATE E&S CONTROLS AND SHALL BE IMMEDIATELY STABILIZED.
3. THE EMBANKMENT SHOULD BE MOWED PERIODICALLY DURING THE GROWING SEASON, ENSURING THE LAST CUTTING OCCURS AT THE END OF THE SEASON. THE GRASS SHOULD NOT BE CUT LESS THAN 6 TO 8 INCHES IN HEIGHT.
4. IF NECESSARY, THE EMBANKMENT SHOULD BE LIMED, FERTILIZED AND SEEDED IN THE FALL AFTER THE GROWING SEASON. LIME AND FERTILIZER APPLICATION RATES SHOULD BE BASED ON SOIL TEST RESULTS.
5. ALL EROSION GULLIES NOTED DURING THE GROWING SEASON SHOULD BE BACKFILLED WITH TOPSOIL, RESEEDED AND PROTECTED (MULCHED) UNTIL VEGETATION IS ESTABLISHED.
6. ALL BARE AREAS AND PATHWAYS ON THE EMBANKMENT SHOULD BE PROPERLY SEEDED AND PROTECTED (MULCHED) OR OTHERWISE STABILIZED.
7. ALL ANIMAL BURROWS SHOULD BE BACKFILLED AND COMPACTED AND BURROWING ANIMALS SHOULD BE REMOVED FROM THE AREA.
8. ALL TREES, WOODY VEGETATION AND OTHER DEEP-ROOTED GROWTH, INCLUDING STUMPS AND ROOT SYSTEMS SHOULD BE REMOVED FROM THE EMBANKMENT AND ADJACENT AREAS EXTENDING TO AT LEAST 25 FEET BEYOND THE EMBANKMENT TOE AND ABUTMENT CONTACTS. THE ROOT SYSTEMS SHOULD BE EXTRACTED AND EXCAVATED VOLUME REPLACED AND COMPACTED WITH SIMILAR MATERIAL TO THE SURROUNDING AREA. ALL SEEDLINGS SHOULD BE REMOVED AT THE FIRST OPPORTUNITY. ANY VINE COVER AND BRUSH SHOULD BE REMOVED FROM THE EMBANKMENT TO ALLOW FOR INSPECTIONS
9. ANY REPAIRS MADE TO THE PRINCIPAL SPILLWAY SHOULD BE REVIEWED BY A PROFESSIONAL ENGINEER.

CUT-OFF TRENCH & IMPERVIOUS CORE NOTES

1. A CUT-OFF TRENCH OF RELATIVELY IMPERVIOUS MATERIAL SHALL BE PROVIDED UNDER THE ENTIRE LENGTHEN OF THE EMBANKMENT AND SHALL BE LOCATED AT OR UPSTREAM FROM THE CENTERLINE OF THE EMBANKMENT. THE CUT-OFF TRENCH SHALL HAVE A MINIMUM WIDTH OF 4 FEET AND SHALL HAVE SIDE SLOPES NO STEEPER THAN ONE HORIZONTAL TO ONE VERTICAL WITH A MINIMUM DEPTH OF 4 FEET.
2. ANY IMPERVIOUS CORE WITHIN THE EMBANKMENT SHALL BE LOCATED AT OR UPSTREAM FROM THE CENTERLINE OF THE EMBANKMENT AND SHALL EXTEND UP FROM THE ABUTMENTS OF THE 25-YEAR WATER SURFACE ELEVATION. THE IMPERVIOUS CORE SHALL EXTEND VERTICALLY FROM THE CUT-OFF TRENCH UP TO THE 25-YEAR WATER SURFACE ELEVATION THROUGHOUT THE EMBANKMENT.

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. DYER
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STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

SWM POND 4 DESIGN SHEET

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
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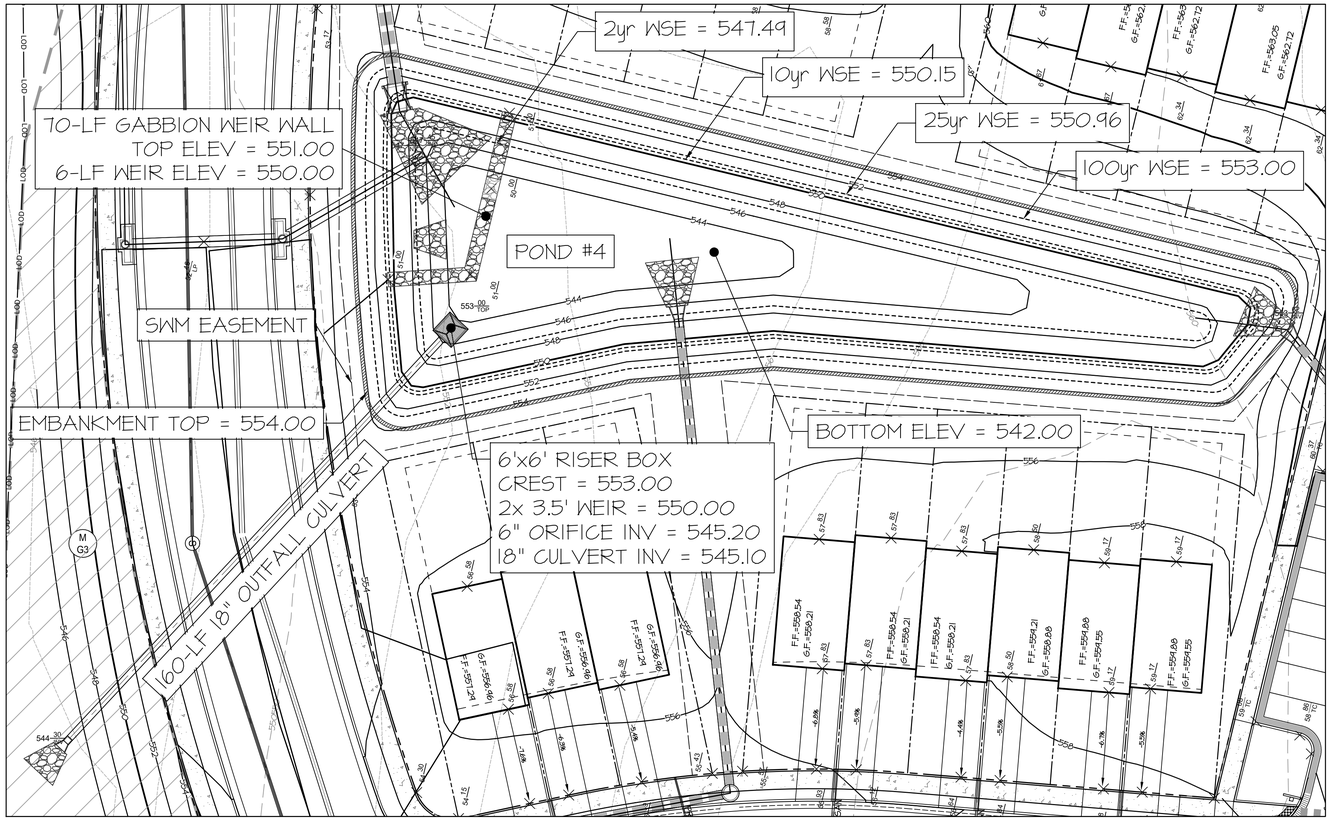
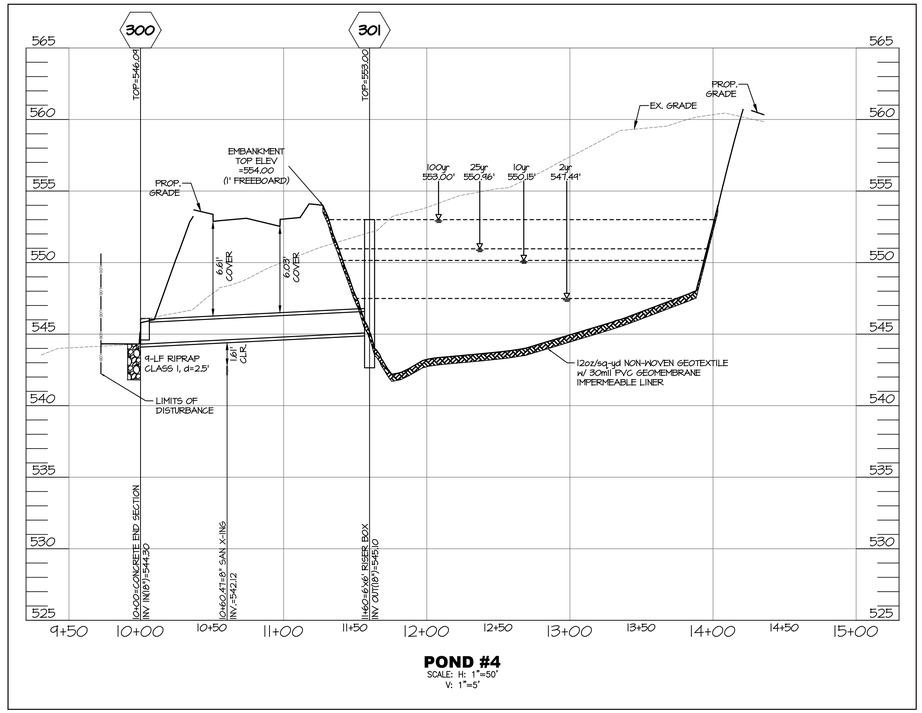
SHEET: 54 OF 71





POND #4
SCALE: H: 1"=50'
V: 1"=5'

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Pond No. 1 - Pr. SWM Pond #4

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 542.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	542.00	1,244	0	0
2.00	544.00	2,521	3,690	3,690
4.00	546.00	4,760	7,163	10,853
6.00	548.00	7,619	12,266	23,119
8.00	550.00	10,445	17,988	41,107
10.00	552.00	13,470	23,849	64,956
12.00	554.00	16,688	30,098	95,053

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	6.00	0.00	0.00
Span (in)	= 18.00	6.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 545.10	545.20	0.00	0.00
Length (ft)	= 430.00	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

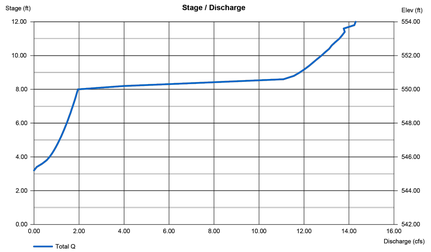
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 24.00	7.00	Inactive	0.00
Crest El. (ft)	= 553.00	550.00	548.25	0.00
Weir Coeff.	= 3.33	3.33	2.60	3.33
Weir Type	= 1		Rect	Broad
Multi-Stage	= Yes	Yes	No	No

Exfil.(in/hr) = 0.000 (by Contour)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Discharge



Hydrograph Report

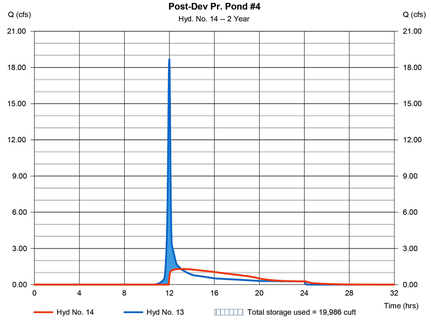
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 14

Post-Dev Pr. Pond #4

Hydrograph type	= Reservoir	Peak discharge	= 1.296 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.03 hrs
Time interval	= 2 min	Hyd. volume	= 35,087 cuft
Inflow hyd. No.	= 13 - Post-Dev DA-7D	Max. Elevation	= 547.49 ft
Reservoir name	= Pr. SWM Pond #4	Max. Storage	= 19,986 cuft

Storage Indication method used.



Hydrograph Report

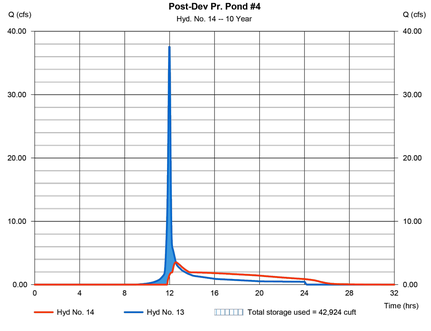
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 14

Post-Dev Pr. Pond #4

Hydrograph type	= Reservoir	Peak discharge	= 3.519 cfs
Storm frequency	= 10 yrs	Time to peak	= 12.57 hrs
Time interval	= 2 min	Hyd. volume	= 77,964 cuft
Inflow hyd. No.	= 13 - Post-Dev DA-7D	Max. Elevation	= 550.15 ft
Reservoir name	= Pr. SWM Pond #4	Max. Storage	= 42,924 cuft

Storage Indication method used.



Hydrograph Report

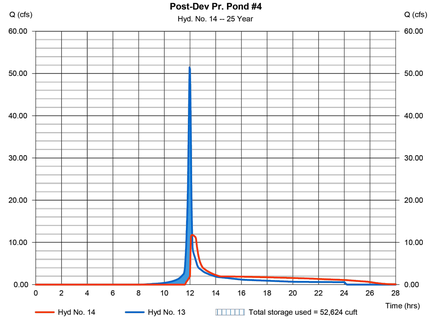
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 14

Post-Dev Pr. Pond #4

Hydrograph type	= Reservoir	Peak discharge	= 11.77 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.17 hrs
Time interval	= 2 min	Hyd. volume	= 109,732 cuft
Inflow hyd. No.	= 13 - Post-Dev DA-7D	Max. Elevation	= 550.97 ft
Reservoir name	= Pr. SWM Pond #4	Max. Storage	= 52,624 cuft

Storage Indication method used.



Hydrograph Report

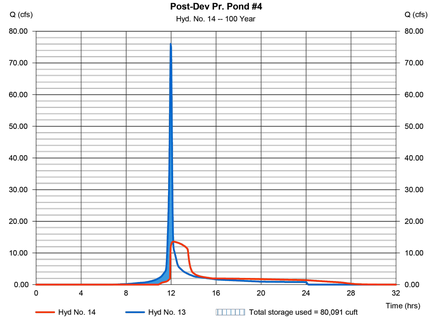
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 14

Post-Dev Pr. Pond #4

Hydrograph type	= Reservoir	Peak discharge	= 13.58 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.20 hrs
Time interval	= 2 min	Hyd. volume	= 167,108 cuft
Inflow hyd. No.	= 13 - Post-Dev DA-7D	Max. Elevation	= 553.01 ft
Reservoir name	= Pr. SWM Pond #4	Max. Storage	= 80,091 cuft

Storage Indication method used.



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20884
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7/28/2025

SWM POND 4 DESIGN SHEET

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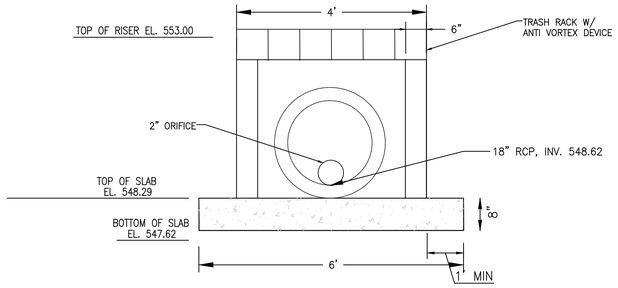

RISER SECTION DETAIL

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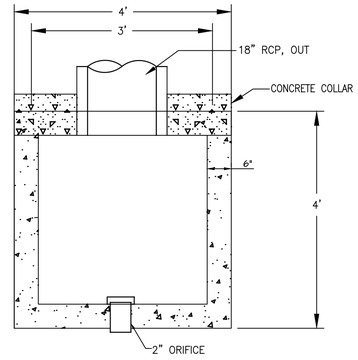

RISER TOP DETAIL

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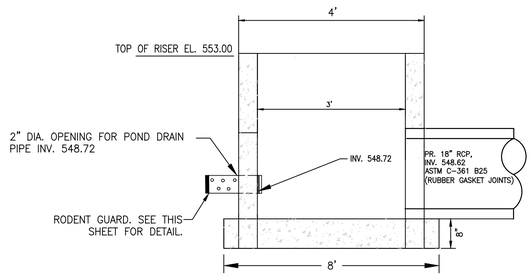

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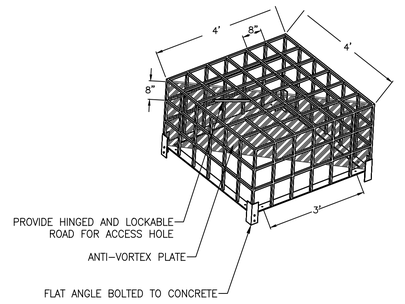
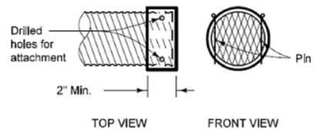
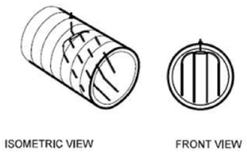


TRASH RACK DETAIL
(TOP OF RISER)

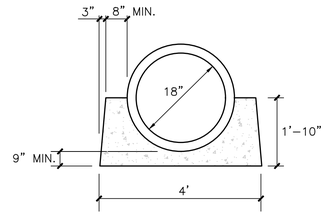


REMOVABLE GRATE



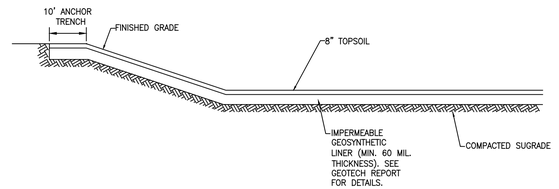
REMOVABLE FORK

RODENT GUARD DETAIL
NOT TO SCALE



NOTES:
1. CRADLE TO BE CONTINUOUS ALONG PIPE.
2. CONCRETE FOR CRADLE TO BE MIX No. 3.

CONCRETE CRADLE DETAIL
N.T.S.



LINER DETAIL
N.T.S.

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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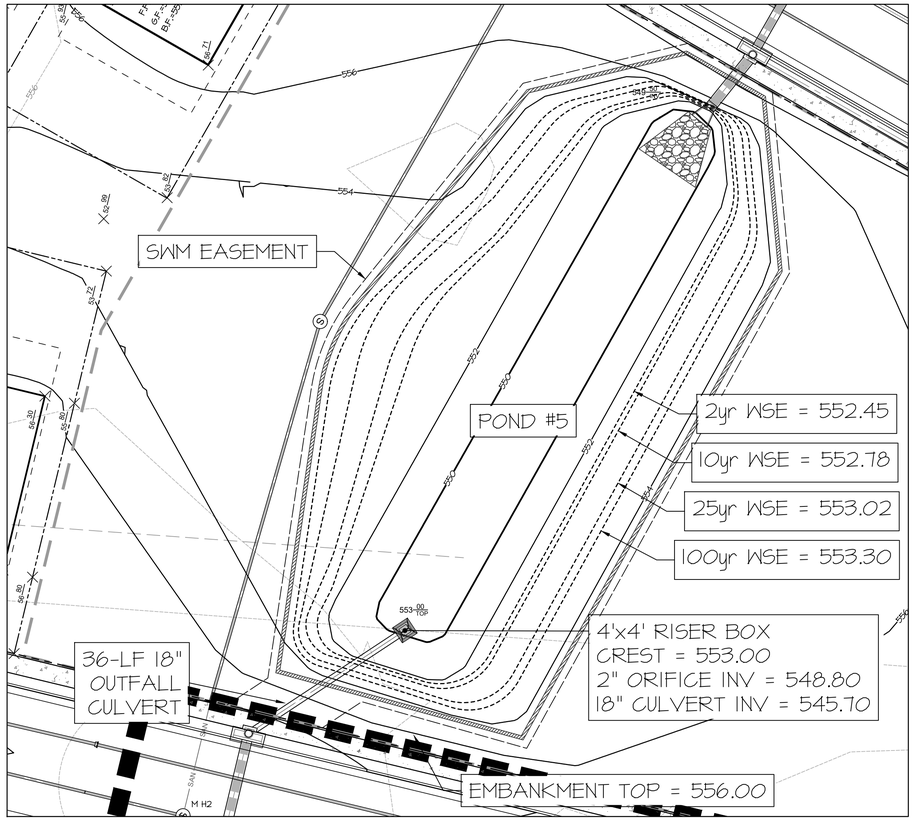
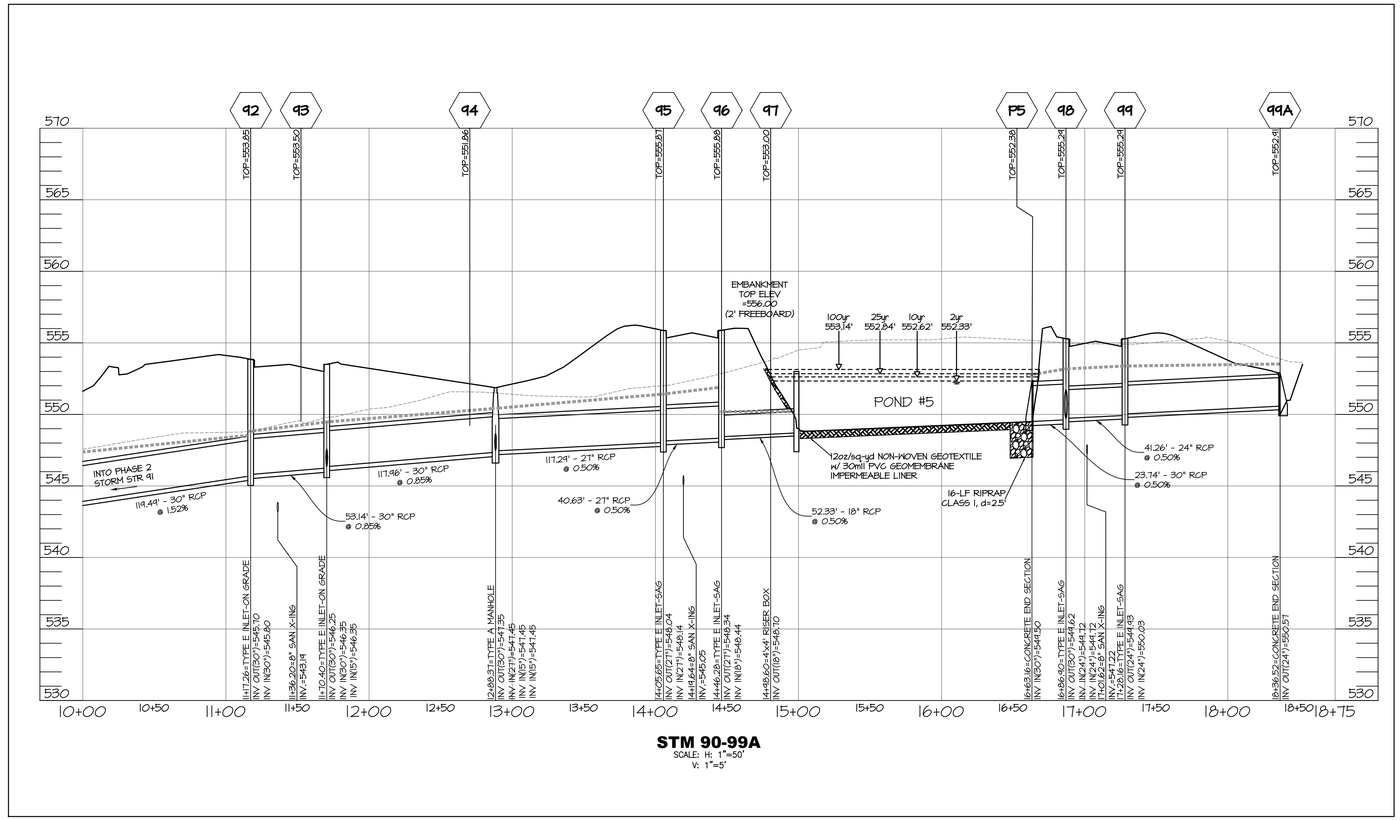
7/28/25

POND 5 DESIGN SHEET

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	56 OF 71





STM 90-99A
SCALE: H: 1"=50'
V: 1"=5'

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Pond No. 4 - Pr. Pond #5

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 550.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	550.00	3,525	0	0
2.00	552.00	7,366	10,657	10,657
4.00	554.00	15,728	22,569	33,226
6.00	556.00	25,935	41,236	74,462

Culvert / Orifice Structures

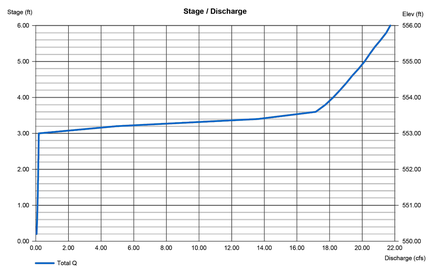
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 18.00	2.00	0.00	0.00
Span (in)	= 18.00	2.00	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 548.62	548.72	0.00	0.00
Length (ft)	= 35.94	0.00	0.00	0.00
Slope (%)	= 0.50	0.00	0.00	n/a
n-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 16.00	0.00	0.00	0.00
Crest El. (ft)	= 553.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No

Exfil.(in/hr) = 0.000 (by Wet area)
TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

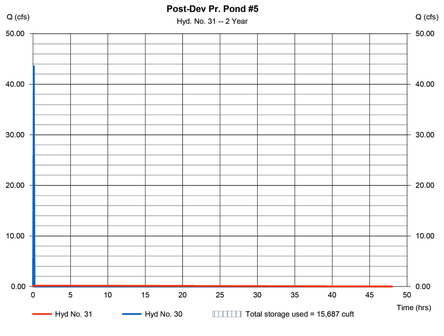
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 31

Post-Dev Pr. Pond #5

Hydrograph type	= Reservoir	Peak discharge	= 0.164 cfs
Storm frequency	= 2 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 15,595 cuft
Inflow hyd. No.	= 30 - Into Pr. Pond #5	Max. Elevation	= 552.45 ft
Reservoir name	= Pr. Pond #5	Max. Storage	= 15,687 cuft

Storage Indication method used.



Hydrograph Report

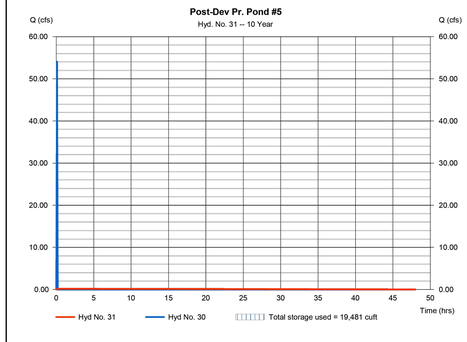
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 31

Post-Dev Pr. Pond #5

Hydrograph type	= Reservoir	Peak discharge	= 0.175 cfs
Storm frequency	= 10 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 19,109 cuft
Inflow hyd. No.	= 30 - Into Pr. Pond #5	Max. Elevation	= 552.78 ft
Reservoir name	= Pr. Pond #5	Max. Storage	= 19,481 cuft

Storage Indication method used.



Hydrograph Report

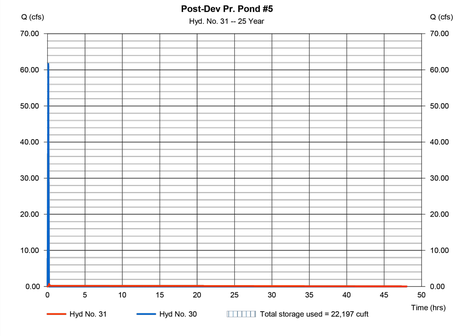
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 31

Post-Dev Pr. Pond #5

Hydrograph type	= Reservoir	Peak discharge	= 0.721 cfs
Storm frequency	= 25 yrs	Time to peak	= 0.20 hrs
Time interval	= 1 min	Hyd. volume	= 21,440 cuft
Inflow hyd. No.	= 30 - Into Pr. Pond #5	Max. Elevation	= 553.02 ft
Reservoir name	= Pr. Pond #5	Max. Storage	= 22,197 cuft

Storage Indication method used.



Hydrograph Report

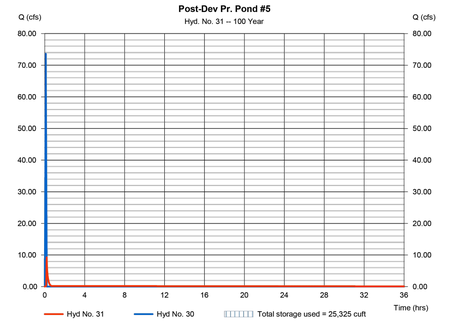
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 04 / 16 / 2025

Hyd. No. 31

Post-Dev Pr. Pond #5

Hydrograph type	= Reservoir	Peak discharge	= 9.274 cfs
Storm frequency	= 100 yrs	Time to peak	= 0.18 hrs
Time interval	= 1 min	Hyd. volume	= 25,735 cuft
Inflow hyd. No.	= 30 - Into Pr. Pond #5	Max. Elevation	= 553.30 ft
Reservoir name	= Pr. Pond #5	Max. Storage	= 25,325 cuft

Storage Indication method used.



DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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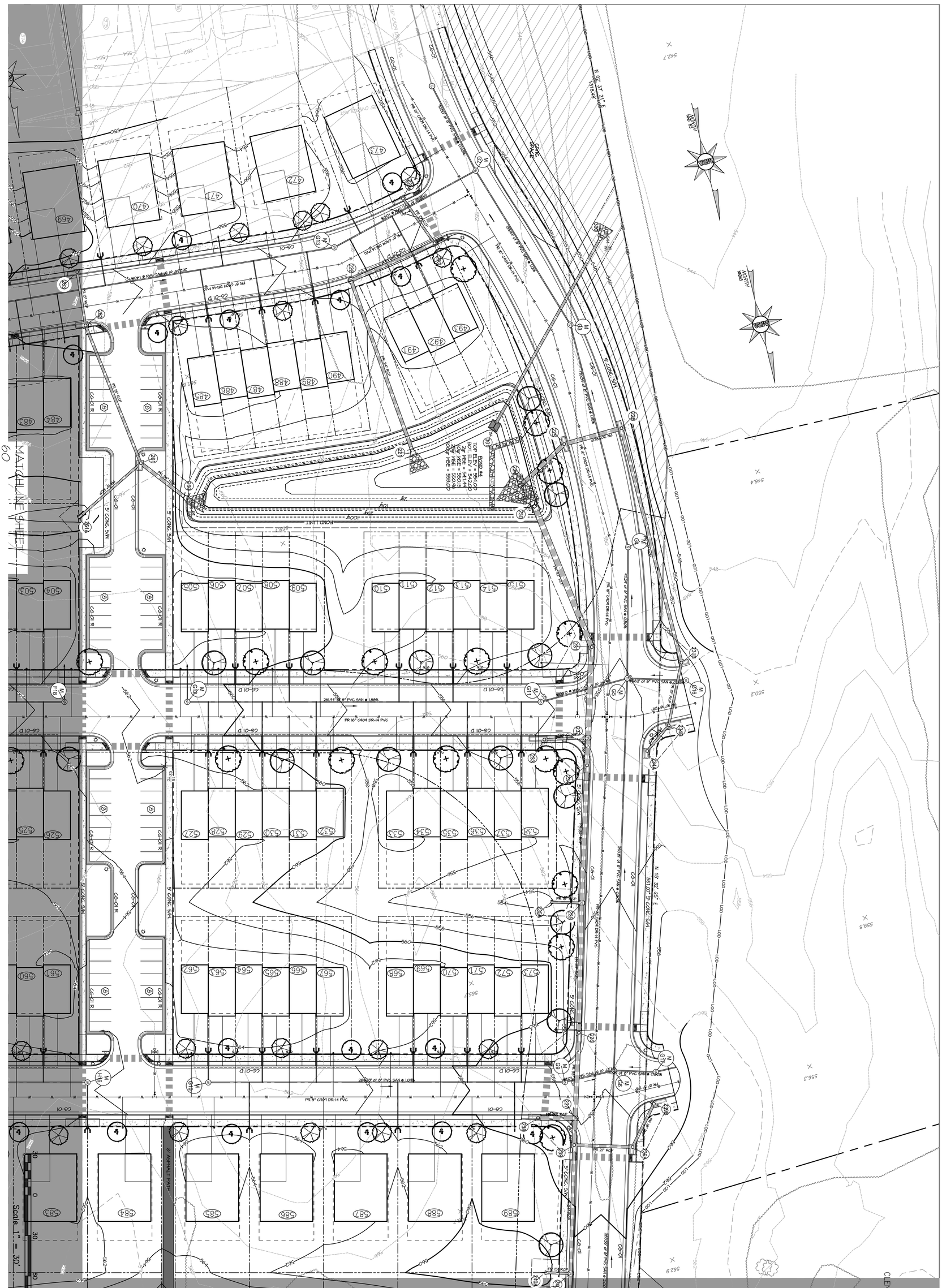
POND 5 DESIGN SHEET

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD



LANDSCAPE, LIGHTING & SIGNAGE PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115

SCALE: 1"=30'

DATE: 04/18/2025

DRAWN BY: KM/BZ

DESIGN BY: KM/BZ

REVIEW BY: RJD

SHEET: 58 OF 71

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7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

Scale 1" = 30'

CLENDENIN, SCOTT E SR & SAMANTHA E
TAX MAP :02-7-8.21
DB. 1144 PG. 406

ANDERSON, BEJAMIN
TAX MAP :02-7-8.22
DB. 1176 PG. 386

JOHNSON, DENNIS K & DEBORAH
TAX MAP :02-7-8.15
DB. 972 PG. 559

WEST END GROUP OF INVESTORS LLC
TAX MAP :02-9-14
DB. 988 PG. 458

FIRST BAPTIST CHURCH OF RANSON TRUSTEES
TAX MAP :02-7-8.5
DB. 427 PG. 641

ARROYAVE, RAFAEL D ET AL
TAX MAP :02-7-49
DB. 939 PG. 369

WILLIAM & PENNY
DB. 1108 PG. 292

SEE BELOW MATCHLINE

SEE ABOVE MATCHLINE

MATCHLINE SHEET 58

MATCHLINE SHEET 61

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
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7/28/25

LANDSCAPE, LIGHTING & SIGNAGE PLAN

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

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REVIEW BY:	RJD
SHEET:	59 OF 71

MATCHLINE SHEET 58

MATCHLINE SHEET 61

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6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
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7/28/25

LANDSCAPE, LIGHTING & SIGNAGE PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1"=30'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	60 OF 71

Scale 1" = 30'

LANDSCAPE, LIGHTING & SIGNAGE PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 61 OF 71

RICHARD J. DEAD — 20864 — STATE OF WEST VIRGINIA — REGISTERED PROFESSIONAL ENGINEER

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LANDSCAPE, LIGHTING & SIGNAGE PLAN

HUNTWELL WEST

VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS

CITY OF RANSON, WEST VIRGINIA

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DRAWN BY: KM/BZ

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STREET NAME	THOROUGHFARE	LINEAR FT.	TREE TYPE	SPECIES ARRANGEMENT	TREE SPACING	TOTAL TREE QTY.
HUNTWELL WEST AVENUE	ST-60-38	666	LARGE SHADE TREE	ALTERNATING	40'	17
MONROE AVENUE	ST-54-36	570	MEDIUM SHADE TREE	ALTERNATING	40' (T3), 30' (T4)	15
SUMTER AVENUE	DR-50-28	741	LARGE SHADE TREE	ALTERNATING	30'	25
SUMTER AVENUE	ST-54-36	1069	MEDIUM SHADE TREE	ALTERNATING	40' (T3), 30' (T4)	36
BARTLETT AVENUE	DR-50-28	662	LARGE SHADE TREE	ALTERNATING	30'	23
BRAXTON AVENUE	ST-54-36	333	MEDIUM SHADE TREE	ALTERNATING	40' (T3), 30' (T4)	12
BRAXTON AVENUE	DR-50-28	647	LARGE SHADE TREE	ALTERNATING	30'	22
GERRY STREET	ST-54-36	781	MEDIUM SHADE TREE	ALTERNATING	40' (T3), 30' (T4)	20
SHERMAN AVE	ST-54-36	1019	MEDIUM SHADE TREE	ALTERNATING	40' (T3), 30' (T4)	26
CURRY ROAD (AKA WYSONG STREET)	ST-60-38	2025	LARGE SHADE TREE	ALTERNATING	40'	51

Note: Types RA-20-18 thoroughfares are alleys and do not require street tree plantings

SYMBOL	QTY.	TREE TYPE	BOTANICAL NAME	COMMON NAME	PLANTING SIZE	COMMENTS
	138	LARGE SHADE TREE	Acer rubrum 'Red Sunset'	Red Sunset Maple	2" Cal.	Strong Central Leader, Uniform
		LARGE SHADE TREE	Quercus rubra	Northern Red Oak	2" Cal.	Strong Central Leader, Uniform
		LARGE SHADE TREE	Tilia cordata 'Greenspire'	Greenspire Littleleaf Linden	2" Cal.	Strong Central Leader, Uniform
		LARGE SHADE TREE	Zelkova serrata ' Green Vase'	Green Vase Japanese Zelkova	2" Cal.	Strong Central Leader, Uniform
	109	MEDIUM SHADE TREE	Carpinus caroliniana	Hornbeam	2" Cal.	Strong Central Leader, Uniform
		MEDIUM SHADE TREE	Ostrya virginiana	American Hornbeam	2" Cal.	Strong Central Leader, Uniform
		MEDIUM SHADE TREE	Corylus americana	Hazelnut	2" Cal.	Strong Central Leader, Uniform
		MEDIUM SHADE TREE	Magnolia virginiana	Sweetbay Magnolia	2" Cal.	Strong Central Leader, Uniform
		MEDIUM SHADE TREE	Sophora japonica	Pagoda Tree	2" Cal.	Strong Central Leader, Uniform
		MEDIUM SHADE TREE	Sophora japonica "regent"	Regent Scholar-tree	2" Cal.	Strong Central Leader, Uniform
		MEDIUM SHADE TREE	Prunus sargentii	Sargent Cherry	2" Cal.	Strong Central Leader, Uniform

Notes:
1. Trees planted in public frontages must be a minimum height of 10 feet and 2 inches in caliper when planted. 5 foot trees and 1 inch caliper shall be permitted if a 2 year warranty is provided.
2. All plant material shall meet the specifications of the American Standard for Nursery Stock (ANSI Z60.1-1996).
3. Location of underground utilities shall be determined prior to start of work to avoid damage.

LANDSCAPING NOTES & STANDARDS:

1) PER RANSON, WV CHAPTER 19A SMARTCODE, ARTICLE 5.10.2; WITHIN DISTRICTS T2, T3, T4 AND T5:

+ PROPOSED TREES AND UNDERSTORY TREES SHALL BE CENTERED HORIZONTALLY AND MINIMALLY...
- TWO (2) FEET FROM WALKWAYS, CURBING, AND OTHER IMPERVIOUS PAVEMENTS WHEN PLANTED IN A TREE WELL OR CONTINOUS PLANTER;
- THREE (3) FEET FROM WALKWAYS, CURBING AND OTHER IMPERVIOUS PAVEMENTS WHEN PLANTED IN A CONTINUOUS SWALE;
- FIVE (5) FEET FROM STREET LIGHTS, UNDERGROUND UTILITIES, UTILITY METERS AND SERVICE LINES, FENCES, WALLS AND OTHER GROUND LEVEL OBSTRUCTIONS;
- SIX (6) FEET FROM PORCH EAVES, AND AWNINGS AND SIMILAR OVERHEAD OBSTRUCTIONS ASSOCIATED WITH THE GROUND LEVEL OF BUILDINGS;
- EIGHT (8) FEET FROM BALCONIES, VERANDAS, BUILDING EAVES AND CORNICES, AND SIMILAR OVERHEAD OBSTRUCTIONS ASSOCIATED WITH THE UPPER STORIES OF BUILDINGS.

+ GROUND VEGETATION OR SHRUB PLANTINGS WITH SPINES, THORNS OR NEEDLES THAT MAY PRESENT HAZARDS TO PEDESTRIANS, BICYCLISTS OR VEHICLES ARE PROHIBITED IN THE FIRST TWO (2) FEET OF THE FIRST LAYER.

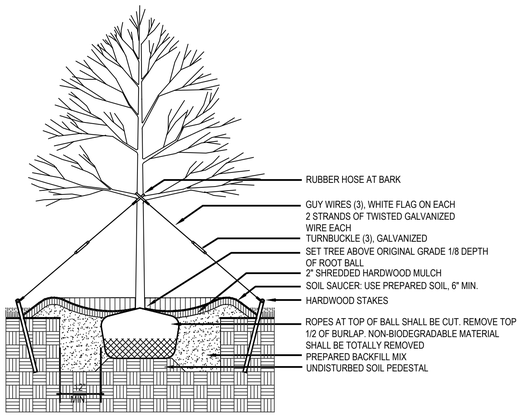
+ ARTIFICIAL PLANTS OR ARTIFICIAL TURF ARE PROHIBITED, EXCLUDING ACTIVE RECREATION SPORTS FIELDS THAT ARE TYPICALLY SUBJECT TO INTENSE USE AND SOIL COMPACTION WHICH PROHIBITS THE ESTABLISHMENT OF TURFGRASS, AND WHERE PAVING OR GRASS PAVING SYSTEMS WILL NOT SUFFICE GIVEN THE AREA'S PURPOSE AND LEVEL OF USE.

+ BUFFERS AND SCREENING ELEMENTS SHALL BE USED TO SCREEN PARKING AREAS FROM PUBLIC VIEW, TO SCREEN SERVICE YARDS AND OTHER PLACES THAT ARE UNSIGHTLY.

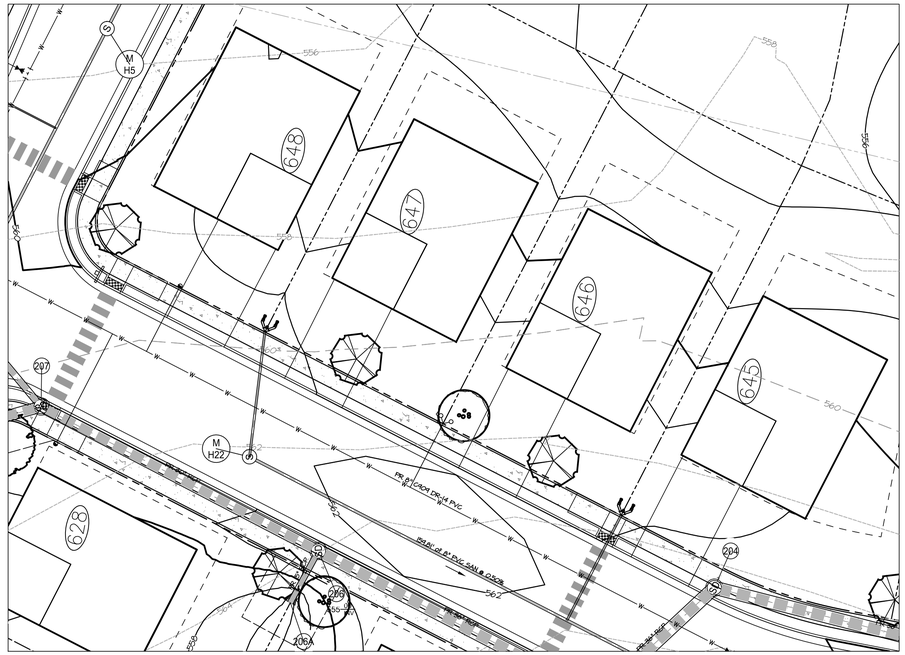
2) PER RANSON, WV CHAPTER 19A SMARTCODE, ARTICLE 7.5.4; WITHIN THE PUBLIC REALM, NO STREET TREE SHALL BE PLANTED CLOSER THAN 35 FEET OF ANY STREET CORNER, MEASURED FROM THE POINT OF THE NEAREST INTERSECTING CURB OR CURBLINE. NO STREET TREES SHALL BE PLANTED CLOSER THAN TEN (10) FEET AWAY FROM ANY FIREPLUG.

3) PER RANSON, WV CHAPTER 19A SMARTCODE, ARTICLE 7.5.5; WITHIN THE PUBLIC REALM, NO STREET TREES OTHER THAN THOSE SPECIES LISTED AS ORNAMENTAL TREES ON TABLE 32 MAY BE PLANTED WITHIN TEN (10) LATERAL FEET OF ANY UNDERGROUND WATER LINE, SEWER LINE, TRANSMISSION LINE, OR OTHER UTILITY.

TYPICAL STREET & LOT PLANTINGS - SINGLE FAMILY ATTACHED
SCALE: 1"=20'



DECIDUOUS SHADE TREE PLANTING
N.T.S.



TYPICAL STREET & LOT PLANTINGS - SINGLE FAMILY (T3)
(FRONT LOAD GARAGE)
SCALE: 1"=20'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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LANDSCAPE NOTES & DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
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DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	63 OF 71

GARABAGE TRUCK CIRCULATION
1"=60'

NORTH
NAD83

Scale 1" = 60'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
205 E. HIRST ROAD, SUITE 106
PURCELLVILLE, VIRGINIA 20132
PHONE: (703) 994-0047
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RICHARD J. DYER
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

VEHICLE TURNING PLAN

HUNTWELL WEST
VILLAGE 1- PHASE 3

CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	1" = 60'
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	64 OF 71

FIRE TRUCK CIRCULATION
1"=60'

NORTH
NAD83

SEE INSET

SEE INSET

60 0 60 120 180
Scale 1" = 60'

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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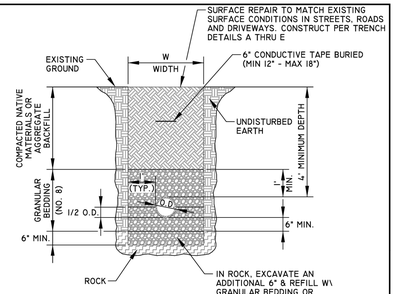
SHEET:	65 OF 71



NOTES:

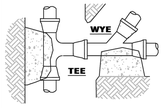
1. W = MAXIMUM PERMISSIBLE TRENCH WIDTH, BASED UPON, W = O.D. + 24", UNLESS APPROVED BY THE ENGINEER.
2. TRENCHES TO BE SHEETED AND BRACED AS REQUIRED.
3. PROVIDE BEARING FOR FULL LENGTH OF BARREL, DIG HOLES FOR THE BELL.
4. BACKFILL ON SIDES TO I/2 O.D. OF PIPE TO HOLD PIPE IN PLACE PRIOR TO PLACING ADDITIONAL BEDDING.
5. BACKFILL TO BE COMPACTED IN 6" LAYERS TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE (+2%) IN ROADS AND STREETS. COMPACT TO MATCH EXISTING GROUND IN OTHER AREAS.
6. MAINTAIN MINIMUM OF 4' OF COVER TO THE TOP OF PIPE.
7. A CASING PIPE SHALL BE REQUIRED IN ROAD CROSSINGS WHERE SHOWN ON PLANS
8. ALL WATER LINES REQUIRE PERMIT FROM APPLICABLE REGULATORY ENTITIES. PERMIT REQUIREMENTS SUPERCEDE WHAT IS SHOWN ON THIS DETAIL.

Charles Town Utility Board	SEWER LINE TRENCH DETAIL	Standard Detail No. S-1
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015

22.5 & 45 DEGREE CONTACT AREA (SF)					
PIPE SIZE	PRESSURE CLASS 100	150	200	250	300
2	1	1	1	1	1
4	1	1	2	2	2
6	2	2	3	4	5
8	3	4	5	7	8
10	4	6	8	10	12
12	5	9	12	15	18
14	8	12	16	20	24

22.5° & 45° BENDS

TEE CONTACT AREA (SF)					
PIPE SIZE	PRESSURE CLASS 100	150	200	250	300
2	1	1	1	1	1
4	1	2	2	2	3
6	2	3	4	5	6
8	4	5	7	9	10
10	5	8	11	13	16
12	7	12	15	19	23
14	10	16	21	26	31

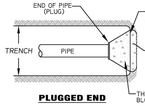


SAME CONTACT AREA AS TEE

90 DEGREE BEND CONTACT AREA (SF)					
PIPE SIZE	PRESSURE CLASS 100	150	200	250	300
2	1	1	1	1	1
4	2	2	3	3	4
6	3	4	5	7	8
8	5	7	10	12	15
10	7	11	15	19	22
12	9	16	21	27	32
14	12	22	29	36	44

90° BEND

PLUGGED END CONTACT AREA (SF)					
PIPE SIZE	PRESSURE CLASS 100	150	200	250	300
2	1	1	1	1	1
4	1	2	2	2	3
6	2	3	4	5	6
8	4	5	7	9	10
10	5	8	11	13	16
12	7	12	15	19	23
14	10	16	21	26	31

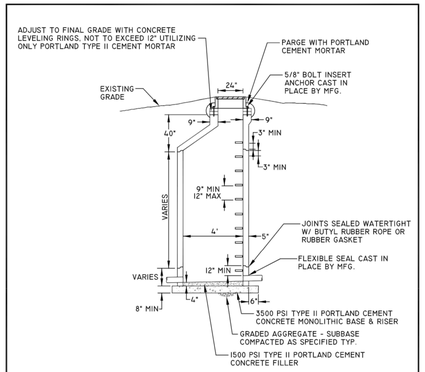


PLUGGED END

THRUST BLOCK GENERAL NOTES

1. ALL CONCRETE SHALL BE 3000 P.S.I. (AE)
2. THRUST BLOCKS SHALL BE IMBEDDED IN UNDISTURBED SOIL.
3. SOIL BEARING CAPACITY IS ASSUMED AT 3000 LB. SQ. FT. FOR WEAKER SOILS THRUST BLOCK AREAS SHALL BE INCREASED AS REQUIRED.
4. WRAP PIPE WITH POLYETHYELENE TO PREVENT CONTACT BETWEEN PIPE AND THE CONCRETE.
5. WITH APPROVAL OF ENGINEER, MEGA-LUG JOINT RESTRAINTS MAYBE SUBSTITUTED FOR THRUST BLOCKS PER MANUFACTURER'S RECOMMENDATIONCTO BE FURNISHED BY CONTRACTOR). FOR DUTICLE IRON, USE UNIFLANGE 1400 OR EBBA 1100 AND FOR C900 PVC, USE UNIFLANGE 1500 OR EBBA 2000PV.

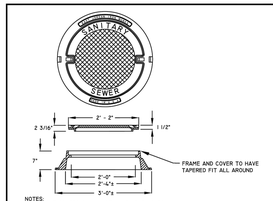
Charles Town Utility Board	PIPE BUTTRESS DETAIL	Standard Detail No. S-5
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015



NOTES:

1. PRECAST MANHOLE SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C 478 UTILIZING TYPE II PORTLAND CEMENT. 3500 PSI MIX MINIMUM.
2. 0.1' FALL TYPICAL INVERT IN TO INVERT OUT OR MATCH CROWNS FOR DIFFERING PIPE DIAMETERS.
3. COMPLETE MANHOLE SHALL PASS VACUUM TEST PRIOR TO ACCEPTANCE.

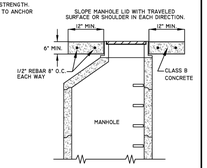
Charles Town Utility Board	PRECAST MANHOLE W/ ECCENTRIC TOP DETAIL	Standard Detail No. S-6
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015



NOTES:

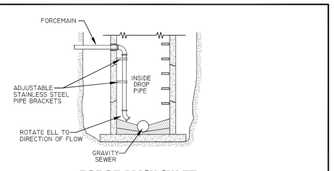
1. MANHOLE COVERS SHALL NOT HAVE VENT HOLES
2. AVERAGE WEIGHT IS 400 LBS
3. DIMENSIONS ARE SHOWN FOR EAST JORDAN IRONWORKS PRODUCTS
4. APPROVED SUPPLIERS:
   EAST JORDAN IRON WORKS
   HIGHWAY: FRAME - PROD. NO. 1045Z UNDIPPED
   COVER - PROD. NO. 1045A UNDIPPED, SELF SEALING
   FRAME & COVER - PROD. NO. 1045AGS UNDIPPED, SELF SEALING
   WATERTIGHT: FRAME & COVER PROD. NO. 1045ZPT/1045APT, UNDIPPED
   NEENAH
   HIGHWAY: FRAME & COVER R-1642, UNDIPPED, SELF SEALING
   WATERTIGHT: FRAME & COVER R-1916, UNDIPPED
5. FRAME AND COVER TO COMPLY WITH ASTM A48, CLASS 35 TENSILE STRENGTH.
6. USE THREADED STAINLESS STEEL STANDARD HEXAGON HEAD BOLTS TO ANCHOR FRAME AND COVER TO MANHOLE

MANHOLE FRAME AND COVER



ANCHOR DETAIL FOR FRAME & COVER IN PAVED ROAD SURFACE AREAS AND SHOULDERS OF ROAD

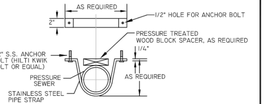
Charles Town Utility Board	MANHOLE FRAME & COVER ANCHOR FOR FRAME & COVER DETAIL	Standard Detail No. S-7
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015



FORCE MAIN INLET

NOTES:

1. FORCE MAIN CONNECTIONS WITHIN MANHOLE SHALL BE RESTRAINED.
2. ANCHOR FORCE MAIN TO MANHOLE USING ADJUSTABLE STAINLESS STEEL PIPE BRACKETS. 2 BRACKETS MIN. AND 3' MAX. SPACING.
3. FOR IRREGULAR HOLES SEAL PIPE ON BOTH SIDES WITH HYDRAULIC CEMEMNT.
4. ANCHOR FORCE MAIN TO MANHOLE USING ADJUSTABLE STAINLESS STEEL PIPE BRACKETS. 2 BRACKETS MIN. WITH MAX SPACING OF 3'.
5. COST OF FORCE MAIN INLET SHALL BE INCLUDED IN UNIT BID PRICE FOR FORCE MAIN.



FORCEMAIN ANCHOR STRAP DETAIL

Charles Town Utility Board	FORCEMAIN MANHOLE FORCEMAIN ANCHOR STRAP DETAIL	Standard Detail No. S-9
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015

NOTES:

1. INSIDE DROP CONNECTION SHALL NOT BE USED, EXCEPT WHERE APPROVED BY CHARLES TOWN UTILITY BOARD FOR THE SPECIFIC APPLICATION.
2. MAXIMUM SLOPE OF INCOMING LINE IS 2.0%.
3. THE ELBOW AT THE BOTTOM OF THE STACK MAY BE EITHER A 45 OR 90-DEGREE BEND, TURNED IN THE DIRECTION OF FLOW. CONSTRUCT CHANNEL TO CONFORM TO THE MANHOLE BENCH.
4. MANHOLE PENETRATIONS TO BE BY CORE BORE AND APPROVED PIPE CONNECTOR. CORE IS TO BE AT LEAST 1' CLEAR OF MANHOLE JOINT.
5. ALL COMPONENTS TO BE IN ACCORDANCE WITH CHARLES TOWN UTILITY BOARD'S APPROVED MATERIALS LIST.
6. THE CAP SHALL BE SECURED TO THE DROP CONNECTION FITTING WITH 2' OF STAINLESS STEEL CHAIN, SECURED WITH STAINLESS MACHINE SCREWS, NUTS, AND WASHERS. THE PIPE SHALL BE BEVELED TO ACCEPT THE CAP.
7. WHERE INCOMING LINE IS TO BE UNDER PRESSURE INSTALL OPTIONAL HOOD FROM RELINER.

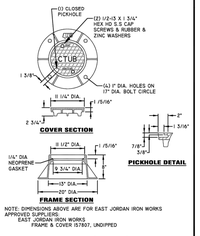
NOV. 2017	INSIDE DROP CONNECTION	S-5

MAIN LINE CLEANOUT

(FOR D ≤ 6")

NOTES:

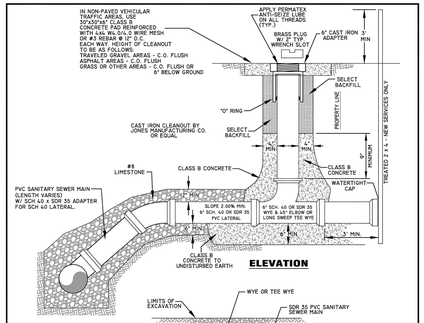
1. CLEANOUT FRAME AND COVER SHALL BE INSTALLED SUCH THAT IT IS STILL TO 2" BELOW SURROUNDING SURFACE. CLEANOUTS PROJECTING ABOVE SURFACE ARE UNACCEPTABLE.
2. FOR CLEANOUTS SUBJECT TO VEHICULAR TRAVEL, CONSTRUCT 30"x30"x8" CLASS B CONCRETE PAD. REINFORCE WITH 4x4 W4.0/4.0 WIRE MESH OR #3 REBAR @ 12" C-C EACH DIRECTION.
3. FOR NON-VEHICULAR TRAFFIC AREAS CONCRETE PAD CAN BE ELIMINATED AT DIRECTION OF ENGINEER. BACKFILL TO MATCH SURROUNDING AREA.
4. USE TEE AND PLUG FOR CLEANOUT AT END OF LINE.
5. FOR MAINLINE DIAMETER OF 8" OR GREATER, USE STRAIGHT TEE.



NOTE: DIMENSIONS ABOVE ARE FOR EAST JORDAN IRON WORKS APPROVED SUPPLIERS: EAST JORDAN IRON WORKS FRAME & COVER 1570Z1, UNDIPPED

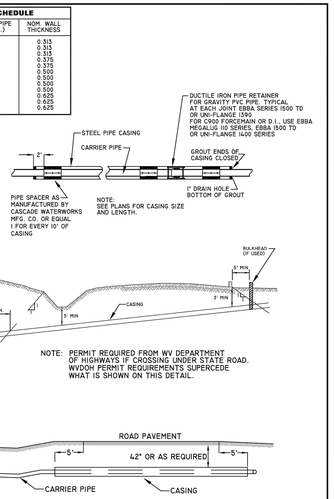
MAIN LINE CLEANOUT FRAME & COVER

Charles Town Utility Board	MAINLINE CLEANOUT & FRAME & COVER DETAIL	Standard Detail No. S-12
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015



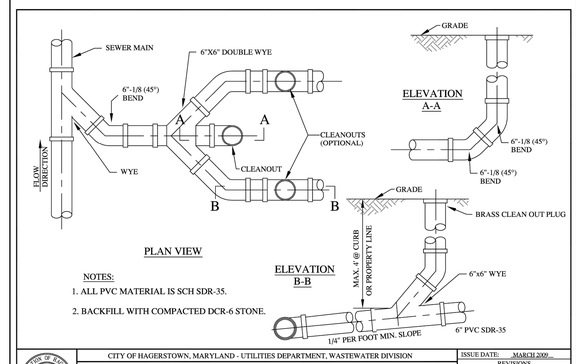
Charles Town Utility Board	NEW LATERAL CONNECTION DETAIL	Standard Detail No. S-13
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015

CASING SCHEDULE		
CARRIER PIPE DIA. (IN.)	CASING PIPE DIA. (IN.)	NOM. WALL THICKNESS
4	10	0.313
6	12	0.313
8	16	0.313
10	24	0.375
12	24	0.375
16	30	0.500
20	36	0.500
24	42	0.500
30	54	0.625
36	66	0.625
42	60	0.625
48	66	0.625



NOTE: PERMIT REQUIRED FROM WV DEPARTMENT OF HIGHWAYS IF CROSSING UNDER STATE ROAD. WVDOH PERMIT REQUIREMENTS SUPERCEDE WHAT IS SHOWN ON THIS DETAIL.

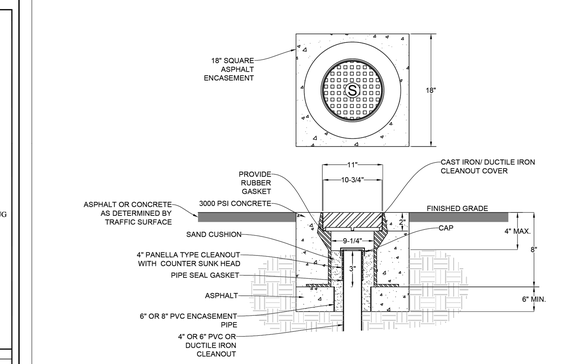
Charles Town Utility Board	PIPE CASING DETAIL	Standard Detail No. S-24
832 S. George Street, P.O. Box 359, Charles Town, WV 25414 Phone: (304) 725-2516 •Fax: (304) 725-4313		NOT TO SCALE
		SEPTEMBER 2015



NOTES:

1. ALL PVC MATERIAL IS SCH SDR-35.
2. BACKFILL WITH COMPACTED DCR-6 STONE.

CITY OF HAGERSTOWN, MARYLAND - UTILITIES DEPARTMENT, WASTEWATER DIVISION	ISSUE DATE: MARCH 2000 REVISIONS	
DOUBLE WYE HOUSE CONNECTION	DETAIL WW114	



CLEANOUT COVER FOR VEHICLE TRAFFIC AREAS

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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RICHARD J. BYERS REGISTERED 20884 STATE OF VIRGINIA PROFESSIONAL ENGINEER 7/28/25

SANITARY SEWER DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

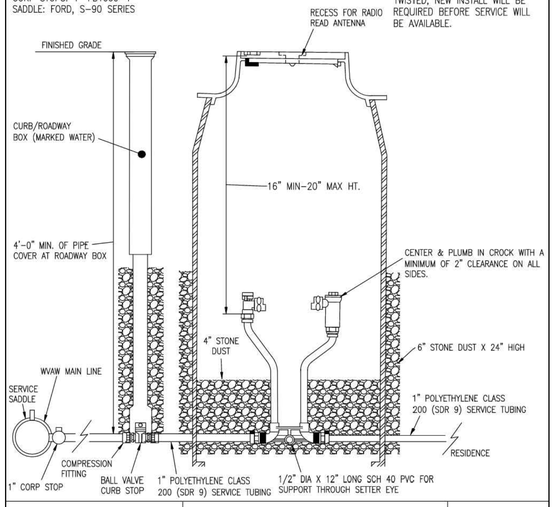
JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	66 OF 71

NOTES:

BOX: 18X22X30 BULLET METER BOX
LID: AYM 74 MAL 115
SETTER: VBHC 74-15W 44-44 (EITHER 12" OR 16" HIGH)
TUBING: 1" CTS HDPE TUBING – 200 PSI
METER: 1" NEPTUNE R-900i
CORP STOPS: 1" FB1000-4
SADDLE: FORD, S-90 SERIES

NOTE:

WHEN INSTALLING THE SETTER, THE USE OF A JUMPER OR IDLER PIPE IS REQUIRED TO ELIMINATE TWISTING OF THE SETTER. WHEN INSPECTION IS COMPLETED BY WVAW STAFF, IF SETTER IS TWISTED, NEW INSTALL WILL BE REQUIRED BEFORE SERVICE WILL BE AVAILABLE.



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

1" COPPERSETTER

•Not to Scale•

W-5.01

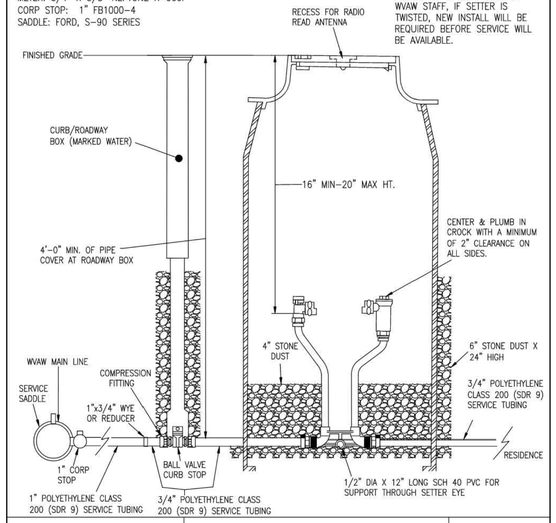
REVISED:
April 2, 2024

NOTES:

BOX: 18X22X30 BULLET METER BOX
LID: AYM 74 MAL 115
SETTER: VBHC 72-12W 44-33 (EITHER 12" OR 16" HIGH)
TUBING: 3/4" AND 1" CTS HDPE TUBING – 200 PSI
METER: 3/4" X 5/8" NEPTUNE R-900i
CORP STOP: 1" FB1000-4
SADDLE: FORD, S-90 SERIES

NOTE:

WHEN INSTALLING THE SETTER, THE USE OF A JUMPER OR IDLER PIPE IS REQUIRED TO ELIMINATE TWISTING OF THE SETTER. WHEN INSPECTION IS COMPLETED BY WVAW STAFF, IF SETTER IS TWISTED, NEW INSTALL WILL BE REQUIRED BEFORE SERVICE WILL BE AVAILABLE.



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

5/8 x 3/4 COPPERSETTER

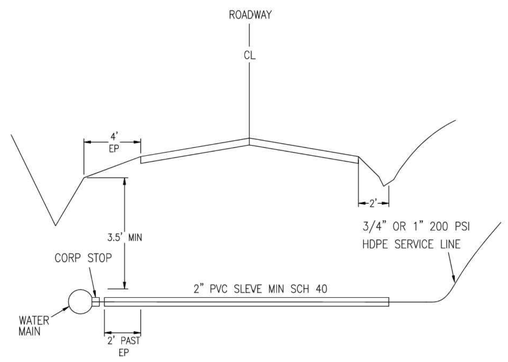
•Not to Scale•

W-5.00

RREVISED:
April 2, 2024

NOTE:

ALL PIPING SHALL BE INCASED IN 6" STONE DUST ON ALL SIDES.



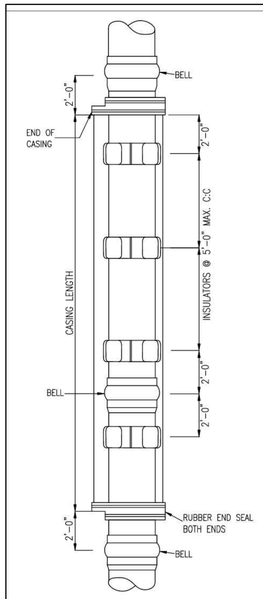
WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

SERVICE LINE CROSSING OF STREETS

•Not to Scale•

W-4.01

REVISED:
April 2, 2024



REQUIRED MINIMUM CASING

CARRIER PIPE	CASING SIZE	CASING WALL	NUMBER INSULATOR SKIDS	BAND WIDTH
2"	8"	0.375	4@90°	8"
4"	10"	0.375	4@90°	8"
6"	12"	0.375	4@90°	8"
8"	16"	0.375	4@90°	8"
10"	20"	0.375	4@90°	8"
12"	24"	0.375	4@90°	8"
16"	30"	0.500	2 ON TOP 4 ON BOTTOM	12"

1. INSULATORS TO BE ADVANCED PRODUCTS MODEL SSIM STAINLESS STEEL CENTERED AND RESTRAINED. SPACED AS SHOWN

2. CASING END SEALS TO BE ADVANCED PRODUCTS MODEL AC

3. CASING REQUIRED FOR STATE HIGHWAY CROSSINGS, UNDER SANITARY SEWERS, UNDER LARGE DIAMETER OR MULTI-BARRELL STORM PIPES, UNDER RAILROAD OR OTHER JOB SPECIFIC SURFACE OBSTRUCTIONS.

4. CASINGS SHALL EXTEND A MINIMUM OF TWO (2) FEET PAST THE EDGE OF PAVEMENT OR OTHER OBSTRUCTION, EXTEND TEN (10) FEET PAST A SEWER UNDER CROSSING, OR SUCH ADDITIONAL DISTANCE AS REQUIRED BY THE HIGHWAY DEPARTMENT OR RAILROAD.

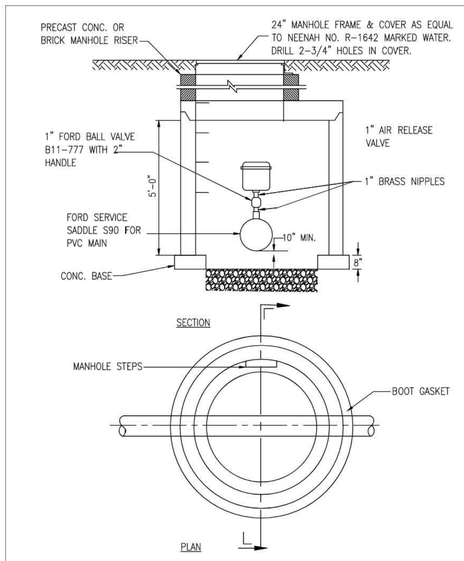
WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

CASING INSTALLATION, OPEN CUT OR BORE AND JACK

•Not to Scale•

W-4.00

REVISED:
April 2, 2024



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

TRAFFIC INSTALLATION AIR VALVE MANHOLE

•Not to Scale•

W-5.04

REVISED:
April 2, 2024

NOTES:

METER BOX: 20X24X30 BULLET

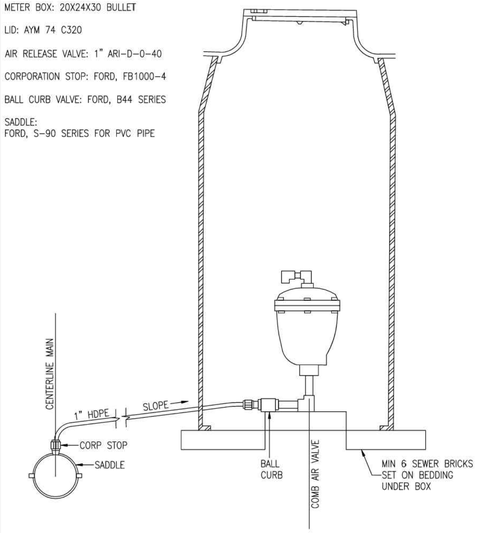
LID: AYM 74 C320

AIR RELEASE VALVE: 1" ARI-D-0-40

CORPORATION STOP: FORD, FB1000-4

BALL CURB VALVE: FORD, B44 SERIES

SADDLE:
FORD, S-90 SERIES FOR PVC PIPE



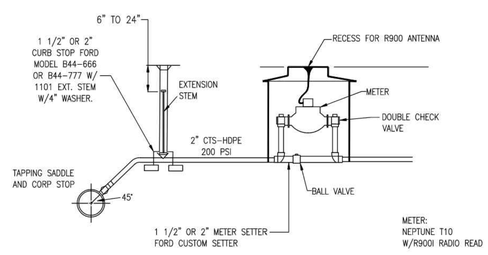
WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

NON-TRAFFIC INSTALLATION COMBINATION AIR VALVE AND VAULT

•Not to Scale•

W-5.03

REVISED:
April 2, 2024



METER SIZE	BOX SIZE	FRAME & COVER	METER SETTER
1.5"	36" X 36"	MC36-T (NON-TRAFFIC) MC36T/RML12 (TRAFFIC)	VBH76 X 15B 13.5-11-66
2"	36" X 36"	MC36-T (NON-TRAFFIC) MC36T/RML12 (TRAFFIC)	VBH77 X 15B 13.2-11-77

**METER BOXES INSTALLED IN TRAFFIC AREAS MUST BE OF MATERIAL AND DESIGN TO SUPPORT TRAFFIC LOADING.

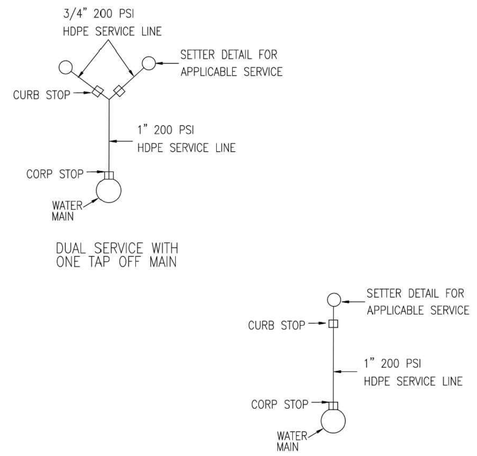
WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

1 1/2" AND 2" METER INSTALLATION

•Not to Scale•

W-5.02

REVISED:
April 2, 2024



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

RESIDENTIAL SERVICE LINE CONFIGURATIONS

•Not to Scale•

W-4.02

REVISED:
April 2, 2024

*ALL HYDRANTS TO BE MUELLER, BLUE WITH WHITE BONNETTS

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
205 E. HIRST ROAD, SUITE 106
PURCELLVILLE, VIRGINIA 20132
PHONE: (703) 994-0047
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RICHARD J. DYER REGISTERED 20684 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

WATERLINE DETAILS

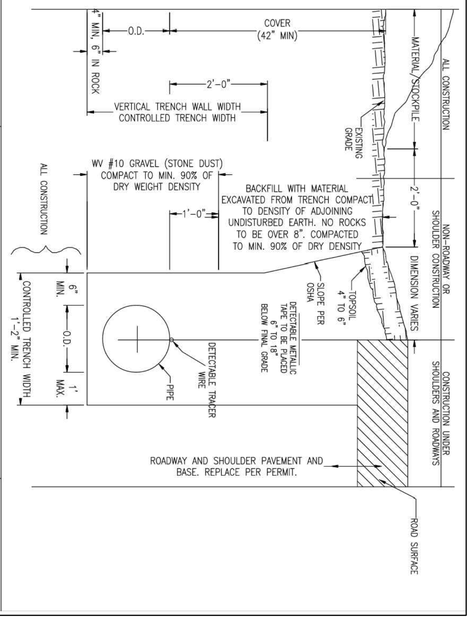
HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

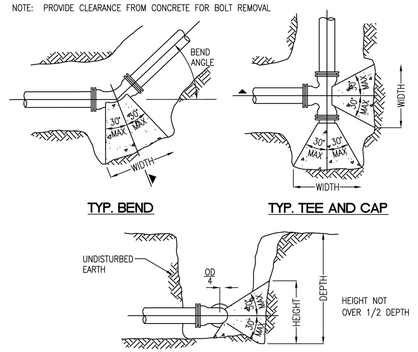
JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 67 OF 71

WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

TRENCH DETAIL
•Not to Scale•

W-1.00
REVISED:
April 2, 2024





TYPICAL SECTION

NOTE: BEARING AREAS ARE BASED ON 225 P.S.I. TEST PRESSURE AND A SOIL RESISTANCE OF 2000 P.S.F. IF WEAK (LESS THAN 2000 P.S.F. RESISTANCE) SOIL POCKETS ARE ENCOUNTERED, INCREASE THE BEARING AREAS SHOWN TO PREVENT MOVEMENT UNDER TEST OR OPERATING PRESSURES.

PIPE SIZE	MINIMUM BEARING AREA (S.F.) = WIDTH X DEPTH				HYD, TEE, CAP
	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND	VALVE, PLUG
3"	3	2	1	1	2
4"	4	2	2	1	3
6"	7	4	3	2	5
8"	12	7	4	3	8
10"	19	11	6	4	13
12"	26	15	8	5	18

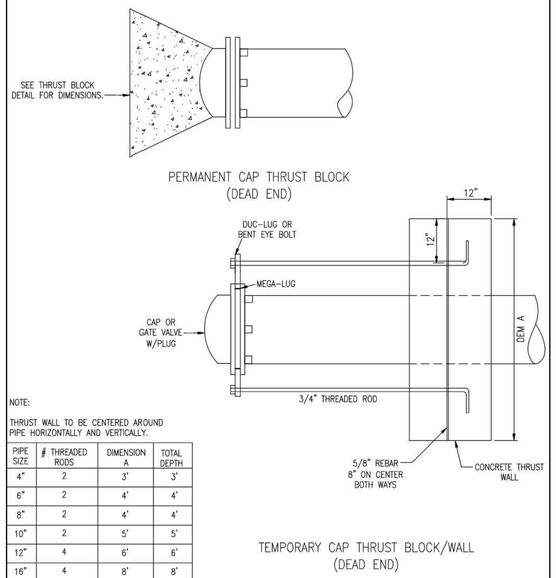
THRUST BLOCKS TO BE CLASS 3000 PSI CONCRETE (MIN.)

ALL MECHANICAL JOINTS ARE TO BE PROVIDED WITH MEGA LUGE JOINT RESTRAINTS.

WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

THRUST BLOCK
•Not to Scale•

W-2.00
REVISED:
April 2, 2024



NOTE:
THRUST WALL TO BE CENTERED AROUND PIPE HORIZONTALLY AND VERTICALLY.

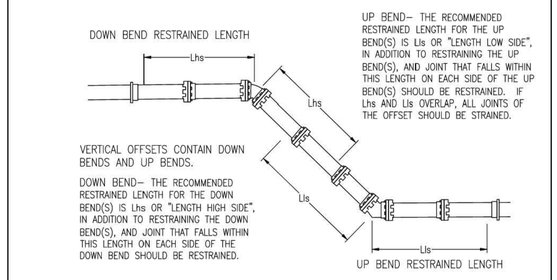
PIPE SIZE	# THREADED RODS	DIMENSION A	TOTAL DEPTH
4"	2	3'	3'
6"	2	4'	4'
8"	2	4'	4'
10"	2	5'	5'
12"	4	6'	6'
16"	4	8'	8'

TEMPORARY CAP THRUST BLOCK/WALL (DEAD END)

WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

PERMANENT AND TEMPORARY THRUST BLOCK/WALL
•Not to Scale•

W-2.01
REVISED:
April 2, 2024



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

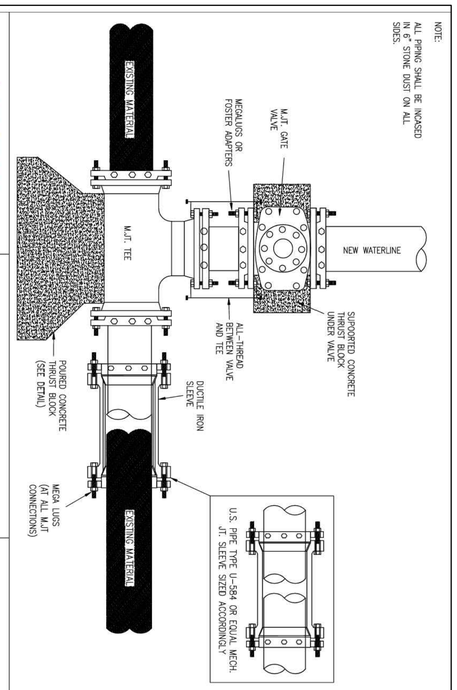
VERTICAL OFFSET
•Not to Scale•

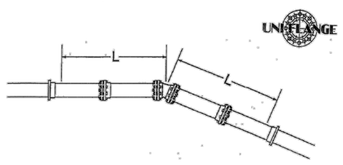
W-2.02
REVISED:
April 2, 2024

WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

NEW WATERLINE TIE-IN/ CUT-IN TIE DETAIL
•Not to Scale•

W-2.03
REVISED:
April 2, 2024





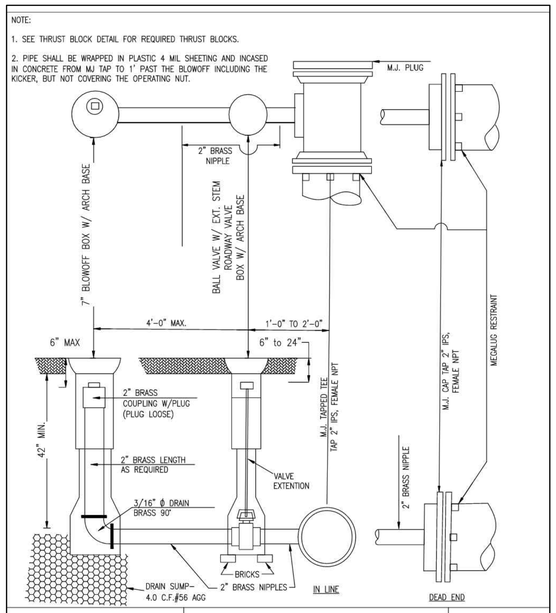
Horizontal bends are the most common examples of changes in direction that require restraint. In addition to restraining each side of the bend, any joints that fall within the recommended restrained length (L) on each side of the bend should be restrained.

Test Pressure	Type Fitting	Restrained Length of Pipe - L - in Feet for Type & Size of Pipe							
		PVC				DIP			
		6"	8"	10"	12"	6"	8"	10"	12"
	Degree	Horizontal Bends				Horizontal Bends			
150#	90	16.5	21.5	28.0	30.0	14.5	19.0	22.5	26.5
	45	7.0	9.0	11.0	17.5	6.0	8.0	9.5	11.0
	22.5	3.5	4.5	5.5	6.0	3.0	4.0	4.5	5.5
	11.25	2.0	2.5	2.5	3.0	1.5	2.0	2.5	3.0
200#	90	25.0	32.0	38.5	44.5	19.5	25.5	30.0	35.5
	45	10.5	13.5	16.0	18.5	8.0	10.5	12.5	15.0
	22.5	5.0	6.5	8.0	9.0	4.0	5.0	6.0	7.0
	11.25	2.5	3.5	4.0	4.5	2.0	2.5	3.0	3.5
250#	90	31.0	40.0	48.0	56.0	24.0	31.5	37.5	44.0
	45	13.0	16.5	20.0	23.5	10.0	13.0	15.5	18.5
	22.5	6.5	8.0	10.0	11.5	5.0	6.5	7.5	9.0
	11.25	3.0	4.0	5.0	5.5	2.5	3.5	4.0	4.5
300#	90	37.0	47.5	57.5	67.0	29.0	38.0	45.0	53.0
	45	15.5	20.0	24.0	28.0	12.0	16.0	19.0	22.0
	22.5	7.5	9.5	11.5	13.5	6.0	7.5	9.0	10.5
	11.25	4.0	5.0	6.0	7.0	3.0	4.0	4.5	5.5

WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

HORIZONTAL BENDS
•Not to Scale•

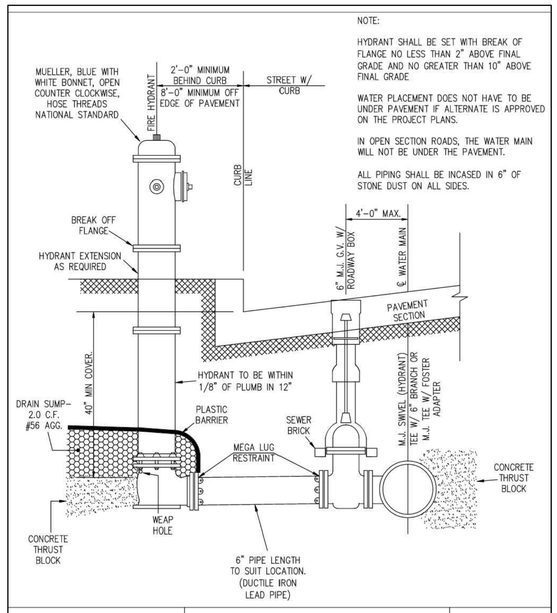
W 2.04
REVISED:
January 3, 2025



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

BLOW-OFF ASSEMBLY
•Not to Scale•

W-3.03
REVISED:
April 2, 2024



WEST VIRGINIA AMERICAN WATER
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

FIRE HYDRANT SETTINGS
•Not to Scale•

W-3.02
REVISED:
April 2, 2024

*ALL HYDRANTS TO BE MUELLER, BLUE WITH WHITE BONNETTS

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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RICHARD J. DYER REGISTERED 20684 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

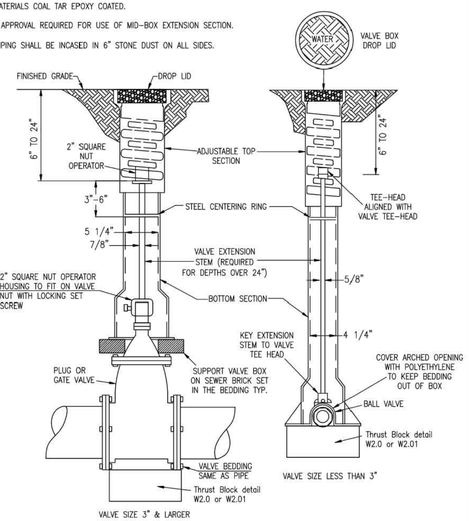
WATERLINE DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	68 OF 71

NOTES:

1. ALL MATERIALS COAL TAR EPOXY COATED.
2. WVAW APPROVAL REQUIRED FOR USE OF MID-BOX EXTENSION SECTION.
3. ALL PIPING SHALL BE INCASED IN 6" STONE DUST ON ALL SIDES.



WEST VIRGINIA AMERICAN WATER

Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

VALVE AND BOX INSTALLATION

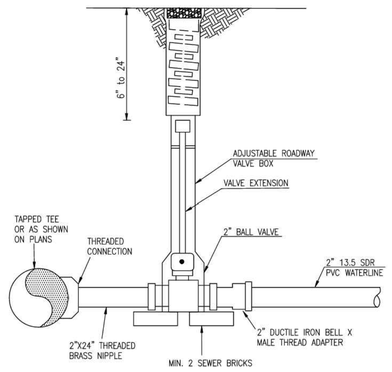
Not to Scale

W-3.00

REVISED:
April 2, 2024

NOTE:

ALL PIPING SHALL BE INCASED IN 6" STONE DUST ON ALL SIDES.



WEST VIRGINIA AMERICAN WATER

Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

2" VALVE DETAIL

Not to Scale

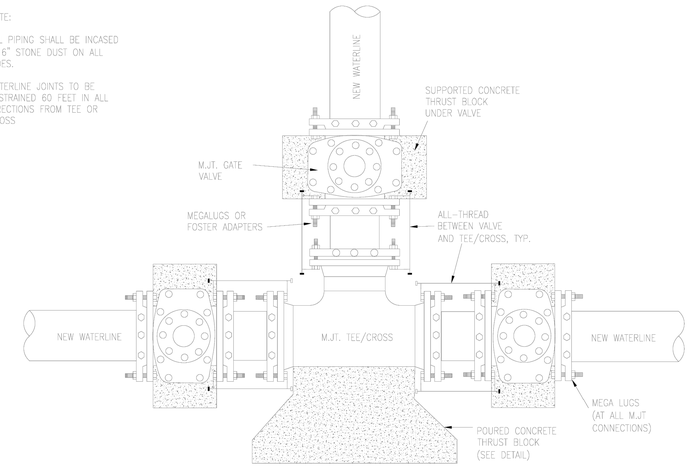
W-3.01

REVISED:
April 2, 2024

NOTE:

ALL PIPING SHALL BE INCASED IN 6" STONE DUST ON ALL SIDES.

WATERLINE JOINTS TO BE RESTRAINED 60 FEET IN ALL DIRECTIONS FROM TEE OR CROSS



WEST VIRGINIA AMERICAN WATER

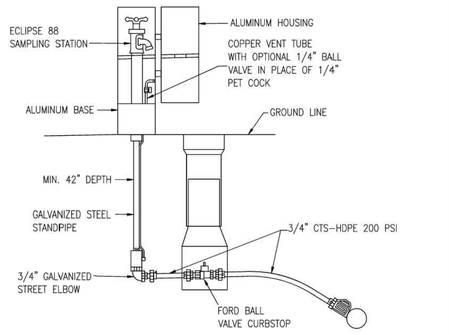
Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

VALVE CLUSTER CONFIGURATION

Not to Scale

W-4.03

REVISED:
January 3, 2025



NOTES: THRUST BLOCK DETAIL MUST BE USED TO ANCHOR THE ELBOW AND STANDPIPE FROM SHIFTING.

WEST VIRGINIA AMERICAN WATER

Eastern Operating Area
150 East Burr Boulevard
Kearneysville, WV 25430

SAMPLING STATION

Not to Scale

W-5.05

REVISED:
April 2, 2024

Spec Pages.indd 1 6/20/07 1:01:10 PM

Non-Detectable Warning Tape

Material Specifications
- 100% virgin low density polyethylene
- Pigmented with lead-free resins
- Withstands temperature range of -94 F through 200 F
- All colors are consistent with A.P.W.A. color code guidelines
- Manufactured for durability and resistance to the elements

Applications
- Non-detectable warning tape is used for protection, early identification, and accurately locating underground utility installations
- A.P.W.A. color code denotes: Orange--Telecommunication and CATV Lines, Blue--Water Lines, Green--Sewer Lines, Purple--Reclaimed Water Lines, Red--Electrical Lines, Yellow--Gas Lines

Product Analysis

ATTRIBUTE		PROCEDURE	VALUE*
Thickness		ASTM D 2103	4.0 MIL
Elongation		ASTM D 88280A	
	MD		600%
	TD		750%
Density		ASTM D 792-66	0.922 (gm/cc)
Tensile Strength		ASTM D 882	
	MD		3,500PSI
	TD		2,700PSI
Printability		ASTM D 2578	Min .45 Dynes
Flexibility		ASTM D 671-76	Pliable Hand
Graphic Repeat		MFRG. SPECS	Repeat Every 23"
Material		MFRG. SPECS	Virgin LDPE

Endorsements
- Meets federal gas safety regulation S-192-321(E)
- Meets OSHA regulation 1926-956 (C) (I) covering the location of underground utility lines

* Values are a nominal + or - 10% to allow for manufacturing variance

Detectable Warning Tape

Material Specifications
- 5.0 mil overall thickness
- 100% virgin low density polyethylene
- Aluminum center core
- Withstands temperature range of -94 F through 200 F
- Manufactured for durability and resistance to the elements

Manufacturing Specifications
- Subsurface graphics
- Triple-layer lamination

Applications
- Detectable warning tape is used for protection, early identification, and accurately locating underground utility installations
- A.P.W.A. color code denotes: Orange--Telecommunication and CATV Lines, Blue--Water Lines, Green--Sewer Lines, Purple--Reclaimed Water Lines, Red--Electrical Lines, Yellow--Gas Lines

Product Analysis

ATTRIBUTE		PROCEDURE	VALUE*
Thickness		ASTM D 2103	5.0 Overall Thickness
Elongation		ASTM D 882804	
	MD		80%
	TD		139%
Density		ASTM D 792-66	1.090 (gm/cc)
Coefficient of Friction		ASTM D 3248-73	Static 0.247
Tensile Strength		ASTM D 882	5,800 PSI
Printability		ASTM D 2578	Min .45 Dynes
Flexibility		ASTM D 671-76	Pliable Hand
Graphic Repeat		MFRG. SPECS	Repeat Every 23"

Endorsements
- Meets federal gas safety regulation S-192-321(E)
- Meets OSHA regulation 1926-956 (C) (I) covering the location of underground utility lines

* Values are a nominal + or - 10% to allow for manufacturing variance

Omega Marking Co.
P.O. Box 655 Beaver Dam, WI 53916

Kris-Tech Wire Co. — **Copper Clad Steel Tracer Wire**

Scope:
Single conductor copper clad steel, HMWPE (high molecular weight polyethylene) insulated tracer/locator wire. Together with the high strength of steel, the electrical and corrosion resistant properties of copper and the rugged properties of HMWPE this product is suitable for direct burial use in wet and dry locations, designed to carry an electrical signal for use in locating underground non-metallic pipe. Versions available in 30 volt, 600 volt and 1000 volt.

Applicable Standards and Tests:
ASTM B-227, B-869, B-910/B-910M all for Copper Clad Steel. ASTM D-1248, ICEA S-70-547, ICEA S-61-402/NEMA WC5, ICEA S-95-658/NEMA WC70, UL 83, UL 1581 All products are spark tested at 7500 VAC unless otherwise specified.

Construction:
Conductors: The single conductors 21% conductivity copper clad steel, dead soft annealed (DSA), stress relieved (SR), high strength (HS) and extra high strength (EHS). Other conductivities and break strengths available by request.

Insulation:
Concentrically applied HMWPE insulation in accordance with UL83. High Density HMWPE is available upon request.

Identification and Packaging:
Custom and standard print legends are available. 500 ft/spl packed 4/box, or 2500 feet/spl spools are standard and packaged and labeled with product name, description, AWG, and manufacturer. Custom lengths, non-standard colors, AWG and custom packaging are available by request.

MADE IN U.S.A.

RoHS

AWG	Breaking Pounds DSA/SR/HS/EHS	Bending Radius (inches)	Insulation Thickness (Inches) 30/600/1KV	Nominal Overall Diameter – Inches	Approx. Shipping Weight (Lbs/Mft)
18	63 / 79 / NA / NA	0.64	0.030 / 0.045 / 0.060	0.10 / 0.13 / 0.16	7 / 9 / 12
16	99 / 125 / NA / NA	0.68	0.030 / 0.045 / 0.060	0.11 / 0.14 / 0.17	10 / 13 / 16
14	161 / 187 / 351 / NA	0.72	0.030 / 0.045 / 0.060	0.12 / 0.15 / 0.18	15 / 18 / 21
12	256 / 303 / 558 / 1185	0.80	0.030 / 0.045 / 0.060	0.14 / 0.17 / 0.20	22 / 25 / 29
10	408 / 473 / 887 / 1940	0.88	0.030 / 0.045 / 0.060	0.16 / 0.19 / 0.22	34 / 37 / 41
8	628 / 950 / 1005 / 2785	1.00	0.030 / 0.045 / 0.060	0.19 / 0.22 / 0.25	51 / 55 / 60

P: (315) 339 5268 • F: (315) 339-5277 • sales@kristechwire.com • www.kristechwire.com

Spec: Tracer-CCS
Issued: 05/03/19
Supersedes: 11/21/16

*ALL HYDRANTS TO BE MUELLER, BLUE WITH WHITE BONNETTS

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. DYER REGISTERED 20684 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

WATERLINE DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.: 21115
SCALE: AS SHOWN
DATE: 04/18/2025
DRAWN BY: KM/BZ
DESIGN BY: KM/BZ
REVIEW BY: RJD
SHEET: 69 OF 71

DIMENSIONS OF GALVANIZED STEEL END SECTION FOR ROUND PIPE									
PIPE DIAM. (INCHES)	METAL THICK. (INCHES)	DIMENSIONS (INCHES) A	B MIN.	B MAX.	C	D	F	SLOPE	APPROX. BODY WT.
12	.064	6	6	6	24	14	2'-0"	2 VERT. : 1 HOR.	1 PC.
15	.064	7	9	8	36	20	2'-0"	2 VERT. : 1 HOR.	1 PC.
18	.064	8	10	8	36	28	2'-0"	2 VERT. : 1 HOR.	1 PC.
21	.064	9	12	8	36	42	2'-0"	2 VERT. : 1 HOR.	1 PC.
24	.064	10	13	8	41	48	2'-0"	2 VERT. : 1 HOR.	1 PC.
30	.079	12	16	8	51	60	2'-0"	2 VERT. : 1 HOR.	1 PC.
36	.079	14	18	8	60	72	2'-0"	2 VERT. : 1 HOR.	2 PC.
42	.109	16	22	11	69	84	2'-0"	2 VERT. : 1 HOR.	2 PC.
48	.109	18	23	12	78	96	2'-0"	2 VERT. : 1 HOR.	2 PC.
54	.109	19	25	12	87	102	3	2 VERT. : 1 HOR.	2 PC.
60	.109	18	33	12	97	114	6'-9"	2 VERT. : 1 HOR.	3 PC.
66	.109	18	36	12	97	120	7'-0"	2 VERT. : 1 HOR.	3 PC.
72	.109	18	39	12	97	126	6'-9"	2 VERT. : 1 HOR.	3 PC.
78	.109	18	42	12	97	132	6'-9"	2 VERT. : 1 HOR.	3 PC.
84	.109	18	45	12	97	138	6'-9"	2 VERT. : 1 HOR.	3 PC.

DIMENSIONS OF GALVANIZED STEEL END SECTION FOR PIPE ARCH									
EQUIV. ROUND PIPE DIAM. (INCHES)	METAL THICK. (INCHES)	DIMENSIONS (INCHES) A	B	C	D	F	SLOPE	APPROX. BODY WT.
17X13 (15")	.064	7	9	8	18	36	2'-0"	2 VERT. : 1 HOR.	2 PC.
21X15 (18")	.064	7	10	8	23	36	2'-0"	2 VERT. : 1 HOR.	2 PC.
24X18 (21")	.064	8	11	8	28	42	2'-0"	2 VERT. : 1 HOR.	2 PC.
28X20 (24")	.064	8	14	8	32	48	2'-0"	2 VERT. : 1 HOR.	2 PC.
35X24 (30")	.079	10	16	8	40	60	2'-0"	2 VERT. : 1 HOR.	2 PC.
42X29 (36"X73")	.079	12	18	8	46	75	2'-0"	2 VERT. : 1 HOR.	3 PC.
49X33 (42"X59")	.109	13	21	9	53	85	2'-0"	2 VERT. : 1 HOR.	3 PC.
57X38 (48"X68")	.109	19	25	10	63	90	2'-0"	2 VERT. : 1 HOR.	3 PC.
64X43 (54"X77")	.109	19	30	12	70	102	2'-0"	2 VERT. : 1 HOR.	3 PC.
71X47 (60"X85")	.109	19	33	12	77	114	2'-0"	2 VERT. : 1 HOR.	3 PC.
77X53 (73"X105")	.109	19	36	12	77	126	2	3 PC.
83X57 (81"X103")	.109	19	39	12	77	138	2	3 PC.

NOTE: SPAN AND RISE DIMENSIONS ARE MEASURED AT THE OUTSIDE OF CORRUGATIONS FOR PIPE ARCHES. ALL OTHER SPAN AND RISE VALUES ARE FOR 2 2/3"x1/2" CORRUGATED PIPE ARCHES.

NOTES

TYPICAL END SECTIONS FOR PIPES AND PIPE ARCHES ARE DETAILED HEREIN. OTHER SIMILAR DESIGNS MAY BE USED IF ACCEPTABLE TO THE ENGINEER.

GALVANIZED STEEL END SECTIONS SHALL BE USED ON THE ENDS OF CORRUGATED STEEL PIPES AND/OR PIPE ARCHES AT THOSE LOCATIONS SPECIFIED ON THE PLANS. END SECTIONS SHALL BE MEASURED AS THE COMPLETE UNIT, INCLUDING TOE PLATE, AND PAYMENT SHALL BE MADE FOR IN ACCORDANCE WITH SEA OF THE SPECIFICATIONS.

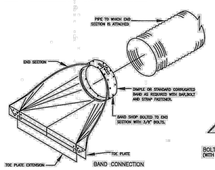
TWO-PIECE AND THREE-PIECE END SECTIONS SHALL BE OF LAP SEAM CONSTRUCTION, TIGHTLY JOINED WITH 3/8 " DIAMETER GALVANIZED STEEL LOW BOLTS.

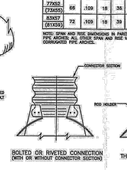
FOR 60" THRU 84" PIPES, THE REINFORCED EDGES OF THE END SECTIONS SHALL BE SUPPLEMENTED WITH GALVANIZED STIFFENER ANGLES FASTENED BY 3/4 " DIAMETER GALVANIZED BOLTS AND NUTS. THIS REQUIREMENT SHALL ALSO BE APPLICABLE TO THE END SECTIONS FOR 77"X73", 73"X 105", 83"X 57", AND 81"X 103" PIPE ARCH SIZES. IN ADDITION, FOR THOSE PIPE ARCH SIZES, ANGLE REINFORCEMENT SHALL BE USED UNDER THE CENTER PANEL SEAMS.

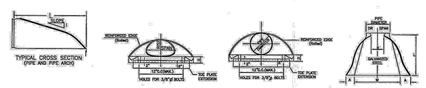
THE END SECTION CONNECTION DETAILS SHALL BE AS SHOWN ON THIS PLAN SHEET OR OF A SIMILAR DESIGN AS RECOMMENDED BY THE MANUFACTURER. ALL SIMILAR DESIGNS SHALL PROVIDE A SECURE ATTACHMENT OF THE END SECTION TO THE PIPE OR PIPE ARCH.

ALTHOUGH A PIPE OR PIPE ARCH MAY HAVE A BITUMINOUS COATING AND/OR PAVED INVERT, IT WILL NOT BE NECESSARY TO BITUMINOUS COAT OR PAVE THE END SECTION, CONNECTORS, OR CONNECTION SECTION.

TOE PLATE EXTENSIONS SHALL BE THE SAME THICKNESS AS THE END SECTIONS AND SHALL BE FASTENED TO THE PLATES WITH 3/8 " DIAMETER GALVANIZED BOLTS. LENGTH OF TOE PLATE EXTENSION SHALL BE W+10"(approx.) FOR 12" THRU 30" DIAMETER PIPES AND FOR PIPE ARCHES WITH RISE VALUES UP TO AND INCLUDING 29", THE LENGTH SHALL BE W+22"(approx.) FOR LARGER PIPE SIZES AND W+15" (approx.) FOR LARGER PIPE ARCHES.







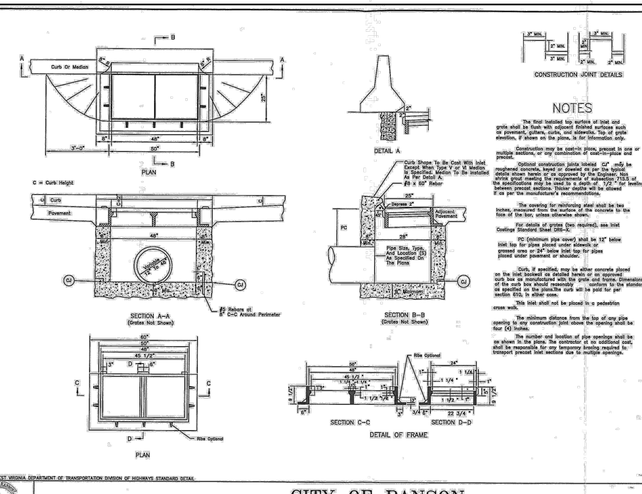
SOURCE: WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS STANDARD DETAIL

CITY OF RANSON

END SECTIONS FOR CORRUGATED STEEL PIPES AND PIPE ARCHES

DWG. NO. ST-003

DATE: 8/2002



NOTES

The final installed top surface of inlet and grate shall be flush with adjacent finished surface such as pavement, gutters, curbs, and sidewalks. Top of grate elevation, if shown on the plans, is for information only.

Construction may be cast-in place, precast in one or multiple sections, or any combination of cast-in-place and precast.

Optional construction joints labeled "CJ" may be roughened concrete, keyed or doweled as per the typical details shown herein or as approved by the Engineer. Non shrink grout meeting the requirements of subsection 715.5 of the specifications may be used to a depth of 1½" for leveling between precast sections. Thicker depths will be allowed as per the manufacturer's recommendations.

This inlet is to be installed in roadside or median ditches only. It is not to be placed adjacent to pavement or in the gutter pan of combination curb and gutter.

The minimum distance from the top of any pipe opening to any construction joint above the opening shall be four (4) inches.

The number and location of pipe openings shall be as shown in the plans. The contractor at no additional cost, shall be responsible for any temporary bracing required to transport precast inlet sections due to multiple openings.

CITY OF RANSON

COMBINATION INLET (TYPE F)

DWG. NO. ST-007

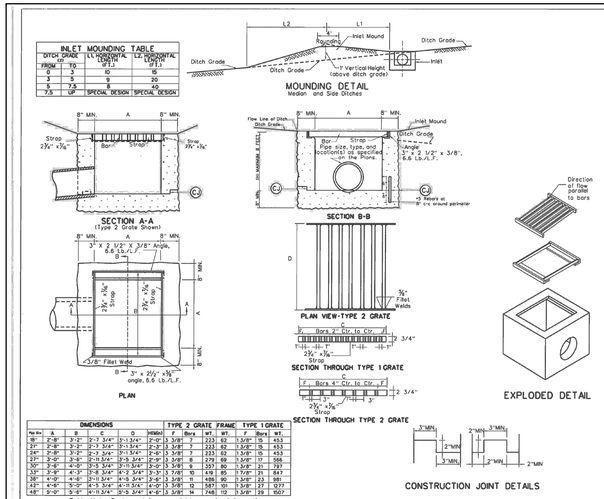
DATE: 8/2002

DIMENSIONS						TYPE 2 GRATE FRAME			TYPE 1 GRATE		
Key No.	A	B	C	D	WEIGHT	F	Bars	Left	Right	F	Bars	Right
18"	2'-8"	3'-2"	2'-1 3/4"	3'-1 3/4"	2'-0"	3/8"	7	223	62	3/8"	15	453
21"	2'-8"	3'-2"	2'-1 3/4"	3'-1 3/4"	2'-0"	3/8"	7	223	62	3/8"	15	453
24"	2'-8"	3'-2"	2'-1 3/4"	3'-1 3/4"	2'-0"	3/8"	7	223	62	3/8"	15	453
30"	3'-0"	3'-6"	2'-5 3/4"	3'-5 3/4"	2'-0"	3/8"	8	279	89	3/8"	17	566
33"	3'-0"	4'-0"	2'-5 3/4"	3'-5 3/4"	2'-0"	3/8"	8	279	89	3/8"	17	566
36"	3'-0"	4'-3"	3'-5 3/4"	4'-1 3/4"	2'-3"	7/16"	10	439	86	7/16"	21	747
39"	4'-0"	4'-6"	3'-11 3/4"	4'-5 3/4"	2'-6"	3/8"	11	488	90	3/8"	23	881
42"	4'-6"	5'-0"	4'-5 3/4"	4'-11 3/4"	2'-9"	3/8"	12	587	101	3/8"	27	1077
48"	5'-0"	5'-6"	4'-11 3/4"	5'-5 3/4"	3'-0"	3/8"	14	748	113	3/8"	28	1507

Table Note: Grate and frame weights are for information only and will increase if larger straps and bars are used.

The following substitutions in dimensions are acceptable for fabricating the grate and frame:

Strap Thickness: 1/2" Strap Depth: 3" (Bar Depth) 3"

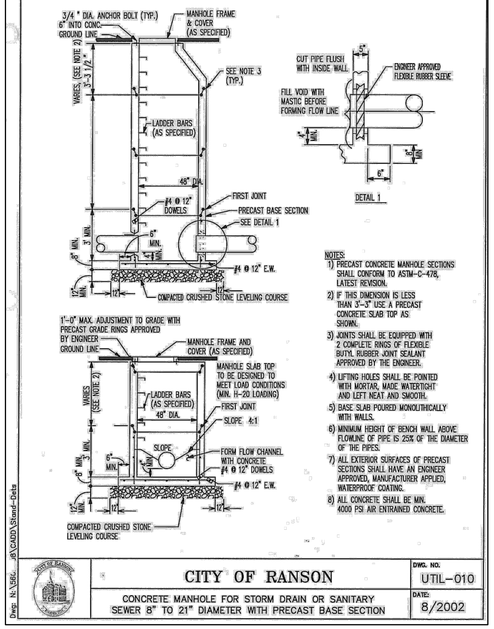


WEST VIRGINIA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS STANDARD DETAIL

REVISED (1-01-00)
REVISED (5-01-12)

TYPE G INLET

STANDARD SHEET DR6-G



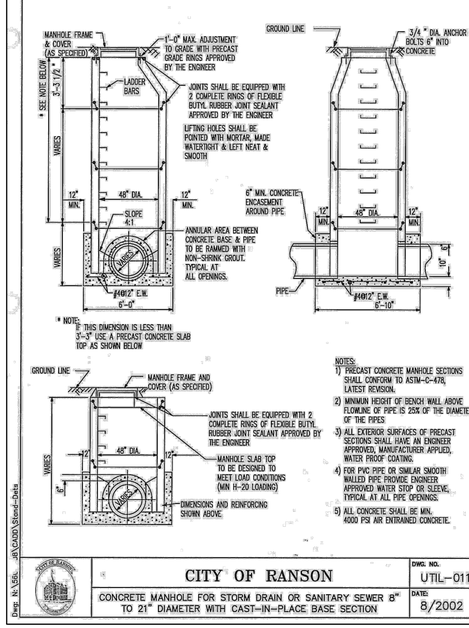
NOTES:
1) PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM-C-478, LATEST REVISION.
2) IF THIS DIMENSION IS LESS THAN 3'-3" USE A PRECAST CONCRETE SLAB TOP AS SHOWN.
3) JOINTS SHALL BE EQUIPPED WITH 2 COMPLETE RINGS OF FLEXIBLE BUTYL RUBBER JOINT SEALANT APPROVED BY THE ENGINEER.
4) LIFTING HOLES SHALL BE POINTED WITH MORTAR, MADE WATERTIGHT AND LEFT NEAT AND SMOOTH.
5) BASE SLAB POURED MONOLITHICALLY WITH WALLS.
6) MINIMUM HEIGHT OF BENCH WALL ABOVE FLOWLINE OF PIPE IS 25% OF THE DIAMETER OF THE PIPES.
7) ALL EXTERIOR SURFACES OF PRECAST SECTIONS SHALL HAVE AN ENGINEER APPROVED, MANUFACTURER APPLIED, WATERPROOF COATING.
8) ALL CONCRETE SHALL BE MIN. 4000 PSI AIR ENTRAINED CONCRETE.

CITY OF RANSON

CONCRETE MANHOLE FOR STORM DRAIN OR SANITARY SEWER 8" TO 21" DIAMETER WITH PRECAST BASE SECTION

DWG. NO. UTIL-010

DATE: 8/2002



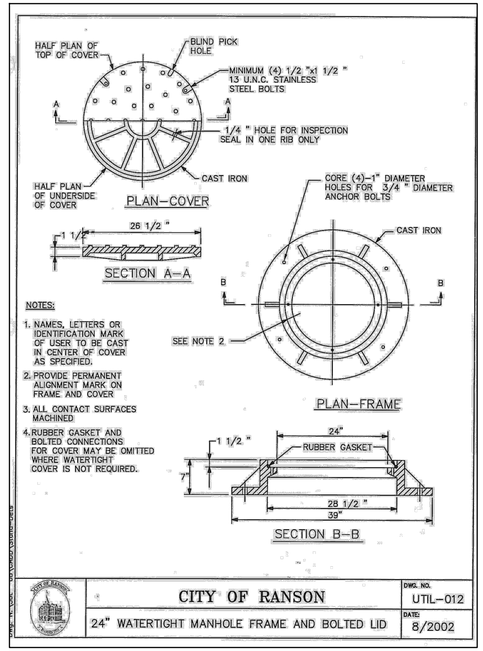
NOTES:
1) PRECAST CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM-C-478, LATEST REVISION.
2) MINIMUM HEIGHT OF BENCH WALL ABOVE FLOWLINE OF PIPE IS 25% OF THE DIAMETER OF THE PIPES
3) ALL EXTERIOR SURFACES OF PRECAST SECTIONS SHALL HAVE AN ENGINEER APPROVED, MANUFACTURER APPLIED, WATER PROOF COATING.
4) FOR PVC PIPE OR SIMILAR SMOOTH WALLED PIPE PROVIDE ENGINEER APPROVED WATER STOP OR SLEEVE, TYPICAL AT ALL PIPE OPENINGS.
5) ALL CONCRETE SHALL BE MIN. 4000 PSI AIR ENTRAINED CONCRETE.

CITY OF RANSON

CONCRETE MANHOLE FOR STORM DRAIN OR SANITARY SEWER 8" TO 21" DIAMETER WITH CAST-IN-PLACE BASE SECTION

DWG. NO. UTIL-011

DATE: 8/2002



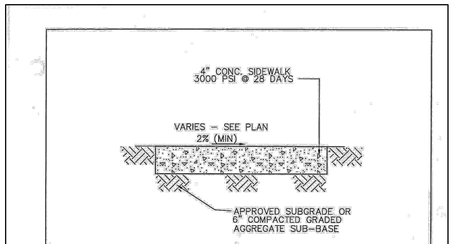
NOTES:
1. NAMES, LETTERS OR IDENTIFICATION MARK OF USER TO BE CAST IN CENTER OF COVER AS SPECIFIED.
2. PROVIDE PERMANENT ALIGNMENT MARK ON FRAME AND COVER
3. ALL CONTACT SURFACES MACHINED
4. RUBBER GASKET AND BOLTED CONNECTIONS FOR COVER MAY BE OMITTED WHERE WATERTIGHT COVER IS NOT REQUIRED.

CITY OF RANSON

24" WATERTIGHT MANHOLE FRAME AND BOLTED LID

DWG. NO. UTIL-012

DATE: 8/2002



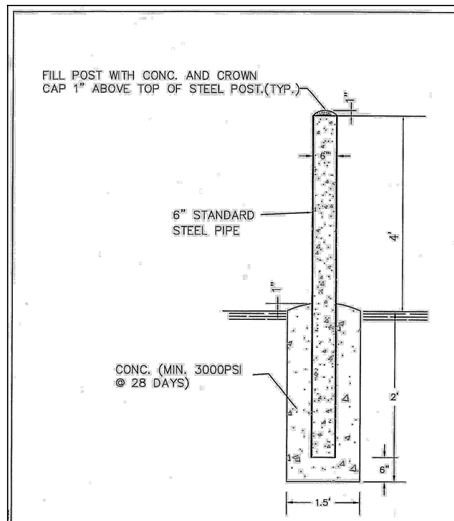
NOTES:
1. REFER TO WVDOT SPECIFICATION FOR MATERIALS AND METHODS OF CONSTRUCTION.
2. CONSTRUCT 1/4" CONTRACTION JOINTS AT 4' INTERVALS.
3. CONSTRUCT 1/2" EXPANSION JOINTS AT 40' INTERVALS, AT RAMPS, DRIVEWAYS, LEADWALKS, CURBS, POLES OR ANY OTHER PERMANENT STRUCTURE.

CITY OF RANSON

CONCRETE SIDEWALK

DWG. NO. SIT-001

DATE: 8/2002



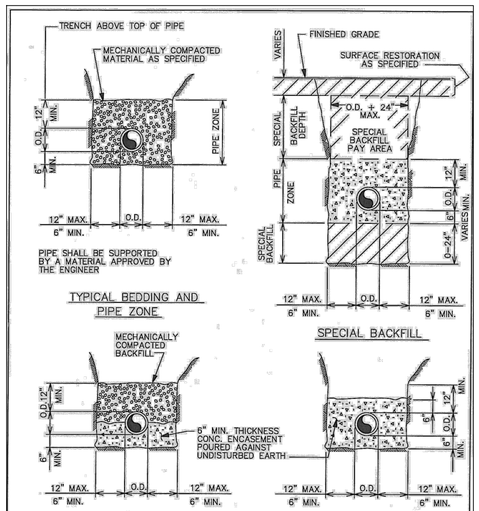
SOURCE: FAIRFAX COUNTY PUBLIC FACILITIES MANUAL

CITY OF RANSON

BOLLARD

DWG. NO. SIT-002

DATE: 8/2002



CITY OF RANSON

PIPE BEDDING

DWG. NO. UTIL-001

DATE: 8/2002

REVISIONS	
DATE	
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

MORRIS & RITCHIE ASSOCIATES, INC.
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MRAGTA.COM

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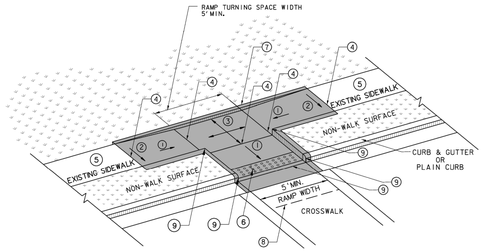
RICHARD J. PETERS REGISTERED 20884 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER 7/28/25

MISCELLANEOUS DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	70 OF 71



TYPE IV RAMP

NOTES

THE TYPE OF RAMP TO BE USED SHALL BE AS SPECIFIED ON THE PLANS. THESE STANDARDS CAN BE CONSIDERED GUIDELINES IN SELECTING RAMP TYPES, HOWEVER THEY CAN BE DEVIATED FROM WITH A SPECIAL DETAIL AS NOTED IN PLANS.

RAMP CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 609 OF THE CURRENT WVDOT, DOH STANDARD SPECIFICATIONS ROADS AND BRIDGES AND ANY SUBSEQUENT DOH SUPPLEMENTAL SPECIFICATIONS, AND THE PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG) DATED JULY 26, 2011. RAMP SURFACE SHALL INCLUDE A "DETECTABLE WARNING SURFACE" (SEE PVT7 SHT. 11 OF 13) AS SHOWN FOR EACH RAMP TYPE. A COARSE BROOM FINISH, TRANSVERSE TO FLARE SLOPES, OR EQUAL NON-SKID FINISH SHALL BE PROVIDED ON CONCRETE SURFACES.

NORMAL GUTTER FLOW LINE AND PROFILE SHALL BE MAINTAINED THROUGH THE RAMP AREA, UNLESS OTHERWISE SHOWN OR SPECIFIED. POSITIVE DRAINAGE MUST BE MAINTAINED SO THAT NO PONDING OCCURS WITHIN THE RAMP OR CLEAR SPACE AREA.

1/4" MINIMUM, 1/2" MAXIMUM PREFORMED EXPANSION JOINT FILLER, MEETING THE REQUIREMENTS OF SECTION 609 OF THE SPECIFICATIONS, AS NOTED ABOVE, SHALL BE PLACED AT ALL LOCATIONS WHERE RAMP CONTACTS CURB, GUTTER, CONCRETE PAVEMENT, OR OTHER RIGID OBJECTS.

WHERE EXISTING SIDEWALK CONNECTS TO PROPOSED SIDEWALK OR RAMPS, EXPANSION JOINTS ALONG WITH DOWEL BARS WILL BE PLACED. DOWEL BARS WILL BE UTILIZED BETWEEN EXISTING AND PROPOSED TO REDUCE VERTICAL CHANGE. SEE SHEET 11 FOR ADDITIONAL INFORMATION.

SAWCUTS WILL BE UTILIZED DURNG DEMOLITION OF EXISTING SIDEWALKS. SIMILAR METHODS MAY BE USED UPON APPROVAL BY FIELD ENGINEER.

RAMPS SHALL NOT BE PLACED IN LINE WITH DRAINAGE STRUCTURES. LOCATION OF THE RAMP SHALL TAKE PRECEDENCE OVER LOCATION OF THE DRAINAGE STRUCTURE, EXCEPT WHERE EXISTING STRUCTURES ARE BEING UTILIZED FOR CONSTRUCTION OF NEW RAMPS.

ANY GRATE IN PEDESTRIAN AREAS SHALL HAVE OPENINGS NOT GREATER THAN 1/2" AND SHALL BE PLACED WITH LONG DIMENSION OF OPENING PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.

IF THE 8.33% (12:1) SLOPE CANNOT BE OBTAINED DUE TO GRADE OF THE ADJACENT ROADWAY, THE SLOPED PORTION OF THE RAMP SHALL BE EXTENDED TO A MINIMUM LENGTH OF 15'-0".

EXISTING CROSS WALK AND STOP BAR MARKINGS TO BE ERADICATED AND RELOCATED AS DICTATED BY PROPOSED RAMP LOCATIONS. COST NOT INCIDENTAL TO COST OF PROPOSED RAMP.

CURB RAMP WIDTH SHALL MATCH SIDEWALK WIDTH PLUS CLEARANCE. TYPICAL SIDEWALK WIDTH IS 5' MINIMUM. RAMP WIDTHS LESS THAN 5' REQUIRE DIVISION/DISTRICT ENGINEER APPROVAL. WIDTHS LESS THAN 4' REQUIRE AN EXCEPTION JUSTIFICATION REPORT. SEE SHEET 11 FOR INFORMATION REGARDING RAMP THICKNESS.

GRADE BREAKS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.

CLEAR SPACE- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE THE WIDTH OF THE CURB RAMP AND EXTENDING 4' MINIMUM INTO THE ABUTTING ROADWAY SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL TRAVEL LANE. SURFACE TO MATCH EXISTING. ANY CLEAR SPACE WORK TO BE COMPLETED WILL BE INCIDENTAL TO THE COST OF THE RAMP.

ALL CURB RAMPS SHALL BE CONSTRUCTED TO PROVIDE ACCESS TO EXISTING OPERABLE PARTS. AN EXAMPLE OF THIS WOULD BE PEDESTRIAN PUSH BUTTONS.

LEGEND

1. 8.33% (12:1) MAXIMUM RAMP SLOPE INCLUDING CONSTRUCTION TOLERANCE SLOPE OF RAMP SHALL CARRY THROUGH TO FACE OF CURB
2. CROSS SLOPE: 2.00% MAXIMUM INCLUDING CONSTRUCTION TOLERANCE
3. CURB RAMPS REQUIRE A (5'-0") MINIMUM TURNING SPACE WHERE PEDESTRIANS PERFORM TURNING MANEUVERS WITH A MAXIMUM CROSS SLOPE OF 2% AND LONGITUDINAL SLOPE MATCHING ROADWAY
4. GRADE BREAK REQUIRED TO BE FLUSH (0") AND PERPENDICULAR TO PEDESTRIAN PATH OF TRAVEL
5. IF SIDEWALK IS EXISTING AND NON-COMPLIANT SEE "TRANSITION TO EXISTING NON-COMPLIANT SIDEWALK" DETAIL SHEET 12
6. DETECTABLE WARNING SURFACE SEE "DETECTABLE WARNING SURFACE (DWS)" DETAIL SHEET 11
7. CURB WALL OR CHEEK WALL AS DICTATED BY FIELD CONDITIONS. SEE "EXISTING ADJACENT SURFACE TRANSITION" DETAIL SHEET 13
8. CLEAR SPACE - WIDTH OF CURB RAMP AND EXTENDING 4' MINIMUM
9. 3/4" CHAMFER EDGE

PAY LIMITS FOR CURB RAMPS (EXCLUDING DWS)

NOT TO SCALE

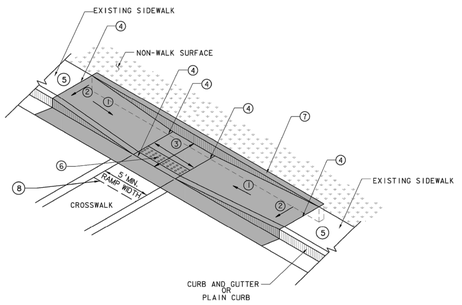
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

PREPARED 1-1-1998

REVISION DATE
7/20/09
10/22/13
10/20/20

SIDEWALK RAMPS
(Sheet 9 of 13)
TYPE IV RAMP

STANDARD SHEET PVT 7



TYPE III RAMP

NOTES

THE TYPE OF RAMP TO BE USED SHALL BE AS SPECIFIED ON THE PLANS. THESE STANDARDS CAN BE CONSIDERED GUIDELINES IN SELECTING RAMP TYPES, HOWEVER THEY CAN BE DEVIATED FROM WITH A SPECIAL DETAIL AS NOTED IN PLANS.

RAMP CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 609 OF THE CURRENT WVDOT, DOH STANDARD SPECIFICATIONS ROADS AND BRIDGES AND ANY SUBSEQUENT DOH SUPPLEMENTAL SPECIFICATIONS, AND THE PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG) DATED JULY 26, 2011. RAMP SURFACE SHALL INCLUDE A "DETECTABLE WARNING SURFACE" (SEE PVT7 SHT. 11 OF 13) AS SHOWN FOR EACH RAMP TYPE. A COARSE BROOM FINISH, TRANSVERSE TO FLARE SLOPES, OR EQUAL NON-SKID FINISH SHALL BE PROVIDED ON CONCRETE SURFACES.

NORMAL GUTTER FLOW LINE AND PROFILE SHALL BE MAINTAINED THROUGH THE RAMP AREA, UNLESS OTHERWISE SHOWN OR SPECIFIED. POSITIVE DRAINAGE MUST BE MAINTAINED SO THAT NO PONDING OCCURS WITHIN THE RAMP OR CLEAR SPACE AREA.

1/4" MINIMUM, 1/2" MAXIMUM PREFORMED EXPANSION JOINT FILLER, MEETING THE REQUIREMENTS OF SECTION 609 OF THE SPECIFICATIONS, AS NOTED ABOVE, SHALL BE PLACED AT ALL LOCATIONS WHERE RAMP CONTACTS CURB, GUTTER, CONCRETE PAVEMENT, OR OTHER RIGID OBJECTS.

WHERE EXISTING SIDEWALK CONNECTS TO PROPOSED SIDEWALK OR RAMPS, EXPANSION JOINTS ALONG WITH DOWEL BARS WILL BE PLACED. DOWEL BARS WILL BE UTILIZED BETWEEN EXISTING AND PROPOSED TO REDUCE VERTICAL CHANGE. SEE SHEET 11 FOR ADDITIONAL INFORMATION.

SAWCUTS WILL BE UTILIZED DURING DEMOLITION OF EXISTING SIDEWALKS. SIMILAR METHODS MAY BE USED UPON APPROVAL BY FIELD ENGINEER.

RAMPS SHALL NOT BE PLACED IN LINE WITH DRAINAGE STRUCTURES. LOCATION OF THE RAMP SHALL TAKE PRECEDENCE OVER LOCATION OF THE DRAINAGE STRUCTURE, EXCEPT WHERE EXISTING STRUCTURES ARE BEING UTILIZED FOR CONSTRUCTION OF NEW RAMPS.

ANY GRATE IN PEDESTRIAN AREAS SHALL HAVE OPENINGS NOT GREATER THAN 1/2" AND SHALL BE PLACED WITH LONG DIMENSION OF OPENING PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.

IF THE 8.33% (12:1) SLOPE CANNOT BE OBTAINED DUE TO GRADE OF THE ADJACENT ROADWAY, THE SLOPED PORTION OF THE RAMP SHALL BE EXTENDED TO A MINIMUM LENGTH OF 15'-0".

EXISTING CROSS WALK AND STOP BAR MARKINGS TO BE ERADICATED AND RELOCATED AS DICTATED BY PROPOSED RAMP LOCATIONS. COST NOT INCIDENTAL TO COST OF PROPOSED RAMP.

CURB RAMP WIDTH SHALL MATCH SIDEWALK WIDTH PLUS CLEARANCE. TYPICAL SIDEWALK WIDTH IS 5' MINIMUM. RAMP WIDTHS LESS THAN 5' REQUIRE DIVISION/DISTRICT ENGINEER APPROVAL. WIDTHS LESS THAN 4' REQUIRE AN EXCEPTION JUSTIFICATION REPORT. SEE SHEET 11 FOR INFORMATION REGARDING RAMP THICKNESS.

GRADE BREAKS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.

CLEAR SPACE- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE THE WIDTH OF THE CURB RAMP AND EXTENDING 4' MINIMUM INTO THE ABUTTING ROADWAY SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL TRAVEL LANE. SURFACE TO MATCH EXISTING. ANY CLEAR SPACE WORK TO BE COMPLETED WILL BE INCIDENTAL TO THE COST OF THE RAMP.

ALL CURB RAMPS SHALL BE CONSTRUCTED TO PROVIDE ACCESS TO EXISTING OPERABLE PARTS. AN EXAMPLE OF THIS WOULD BE PEDESTRIAN PUSH BUTTONS.

LEGEND

1. 8.33% (12:1) MAXIMUM RAMP SLOPE INCLUDING CONSTRUCTION TOLERANCE SLOPE OF RAMP SHALL CARRY THROUGH TO FACE OF CURB
2. CROSS SLOPE: 2.00% MAXIMUM INCLUDING CONSTRUCTION TOLERANCE
3. CURB RAMPS REQUIRE A (5'-0") MINIMUM TURNING SPACE WHERE PEDESTRIANS PERFORM TURNING MANEUVERS WITH A MAXIMUM CROSS SLOPE OF 2% AND LONGITUDINAL SLOPE MATCHING ROADWAY
4. GRADE BREAK REQUIRED TO BE FLUSH (0") AND PERPENDICULAR TO PEDESTRIAN PATH OF TRAVEL
5. IF SIDEWALK IS EXISTING AND NON-COMPLIANT SEE "TRANSITION TO EXISTING NON-COMPLIANT SIDEWALK" DETAIL SHEET 12
6. DETECTABLE WARNING SURFACE SEE "DETECTABLE WARNING SURFACE (DWS)" DETAIL SHEET 11
7. CURB WALL OR CHEEK WALL AS DICTATED BY FIELD CONDITIONS. SEE "EXISTING ADJACENT SURFACE TRANSITION" DETAIL SHEET 13
8. CLEAR SPACE - WIDTH OF CURB RAMP AND EXTENDING 4' MINIMUM
9. 3/4" CHAMFER EDGE

PAY LIMITS FOR CURB RAMPS (EXCLUDING DWS)

NOT TO SCALE

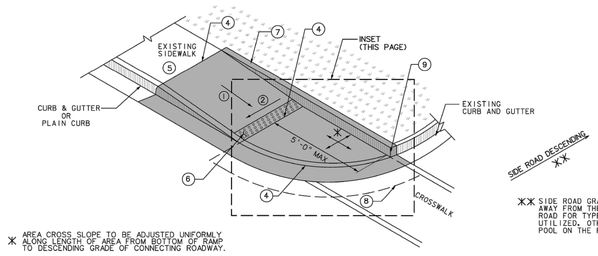
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

PREPARED 1-1-1998

REVISION DATE
7/20/09
10/22/13
10/20/20

SIDEWALK RAMPS
(Sheet 5 of 13)
TYPE III RAMP

STANDARD SHEET PVT 7

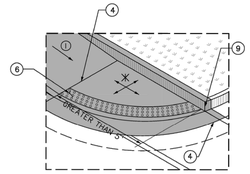


X AREA CROSS SLOPE TO BE ADJUSTED UNIFORMLY ALONG LENGTH OF AREA FROM BOTTOM OF RAMP TO DESCENDING GRADE OF CONNECTING ROADWAY.

XX SIDE ROAD GRADE MUST DECEND AWAY FROM THE RAMP AND PARALLEL ROAD FOR TYPE IIIB TO BE UTILIZED, OTHERWISE WATER WILL POOL ON THE RAMP.

TYPE IIIB

(DESCENDING SIDE ROAD ONLY)



TYPE IIIB (INSET)

NOTES

THE TYPE OF RAMP TO BE USED SHALL BE AS SPECIFIED ON THE PLANS. THESE STANDARDS CAN BE CONSIDERED GUIDELINES IN SELECTING RAMP TYPES, HOWEVER THEY CAN BE DEVIATED FROM WITH A SPECIAL DETAIL AS NOTED IN PLANS.

RAMP CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 609 OF THE CURRENT WVDOT, DOH STANDARD SPECIFICATIONS ROADS AND BRIDGES AND ANY SUBSEQUENT DOH SUPPLEMENTAL SPECIFICATIONS, AND THE PUBLIC RIGHTS OF WAY ACCESSIBILITY GUIDELINES (PROWAG) DATED JULY 26, 2011. RAMP SURFACE SHALL INCLUDE A "DETECTABLE WARNING SURFACE" (SEE PVT7 SHT. 11 OF 13) AS SHOWN FOR EACH RAMP TYPE. A COARSE BROOM FINISH, TRANSVERSE TO FLARE SLOPES, OR EQUAL NON-SKID FINISH SHALL BE PROVIDED ON CONCRETE SURFACES.

NORMAL GUTTER FLOW LINE AND PROFILE SHALL BE MAINTAINED THROUGH THE RAMP AREA, UNLESS OTHERWISE SHOWN OR SPECIFIED. POSITIVE DRAINAGE MUST BE MAINTAINED SO THAT NO PONDING OCCURS WITHIN THE RAMP OR CLEAR SPACE AREA.

1/4" MINIMUM, 1/2" MAXIMUM PREFORMED EXPANSION JOINT FILLER, MEETING THE REQUIREMENTS OF SECTION 609 OF THE SPECIFICATIONS, AS NOTED ABOVE, SHALL BE PLACED AT ALL LOCATIONS WHERE RAMP CONTACTS CURB, GUTTER, CONCRETE PAVEMENT, OR OTHER RIGID OBJECTS.

WHERE EXISTING SIDEWALK CONNECTS TO PROPOSED SIDEWALK OR RAMPS, EXPANSION JOINTS ALONG WITH DOWEL BARS WILL BE PLACED. DOWEL BARS WILL BE UTILIZED BETWEEN EXISTING AND PROPOSED TO REDUCE VERTICAL CHANGE. SEE SHEET 11 FOR ADDITIONAL INFORMATION.

SAWCUTS WILL BE UTILIZED DURING DEMOLITION OF EXISTING SIDEWALKS. SIMILAR METHODS MAY BE USED UPON APPROVAL BY FIELD ENGINEER.

RAMPS SHALL NOT BE PLACED IN LINE WITH DRAINAGE STRUCTURES. LOCATION OF THE RAMP SHALL TAKE PRECEDENCE OVER LOCATION OF THE DRAINAGE STRUCTURE, EXCEPT WHERE EXISTING STRUCTURES ARE BEING UTILIZED FOR CONSTRUCTION OF NEW RAMPS.

ANY GRATE IN PEDESTRIAN AREAS SHALL HAVE OPENINGS NOT GREATER THAN 1/2" AND SHALL BE PLACED WITH LONG DIMENSION OF OPENING PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL.

IF THE 8.33% (12:1) SLOPE CANNOT BE OBTAINED DUE TO GRADE OF THE ADJACENT ROADWAY, THE SLOPED PORTION OF THE RAMP SHALL BE EXTENDED TO A MINIMUM LENGTH OF 15'-0".

EXISTING CROSS WALK AND STOP BAR MARKINGS TO BE ERADICATED AND RELOCATED AS DICTATED BY PROPOSED RAMP LOCATIONS. COST NOT INCIDENTAL TO COST OF PROPOSED RAMP.

CURB RAMP WIDTH SHALL MATCH SIDEWALK WIDTH PLUS CLEARANCE. TYPICAL SIDEWALK WIDTH IS 5' MINIMUM. RAMP WIDTHS LESS THAN 5' REQUIRE DIVISION/DISTRICT ENGINEER APPROVAL. WIDTHS LESS THAN 4' REQUIRE AN EXCEPTION JUSTIFICATION REPORT. SEE SHEET 11 FOR INFORMATION REGARDING RAMP THICKNESS.

GRADE BREAKS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.

CLEAR SPACE- BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE THE WIDTH OF THE CURB RAMP AND EXTENDING 4' MINIMUM INTO THE ABUTTING ROADWAY SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL TRAVEL LANE. SURFACE TO MATCH EXISTING. ANY CLEAR SPACE WORK TO BE COMPLETED WILL BE INCIDENTAL TO THE COST OF THE RAMP.

ALL CURB RAMPS SHALL BE CONSTRUCTED TO PROVIDE ACCESS TO EXISTING OPERABLE PARTS. AN EXAMPLE OF THIS WOULD BE PEDESTRIAN PUSH BUTTONS.

LEGEND

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PAY LIMITS FOR CURB RAMPS (EXCLUDING DWS)

NOT TO SCALE

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STANDARD DETAIL

PREPARED 1-1-1998

REVISION DATE
7/20/09
10/22/13
10/20/20

SIDEWALK RAMPS
(Sheet 8 of 13)
TYPE IIIB RAMP

STANDARD SHEET PVT 7

DATE	REVISIONS
6/12/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS
7/28/25	CITY OF RANSON, CTUB, AND WVAW COMMENTS

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RICHARD J. DYER
REGISTERED
20884
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
7/28/25

MISCELLANEOUS DETAILS

HUNTWELL WEST
VILLAGE 1- PHASE 3
CONSTRUCTION DRAWINGS
CITY OF RANSON, WEST VIRGINIA

JOB NO.:	21115
SCALE:	AS SHOWN
DATE:	04/18/2025
DRAWN BY:	KM/BZ
DESIGN BY:	KM/BZ
REVIEW BY:	RJD
SHEET:	71 OF 71