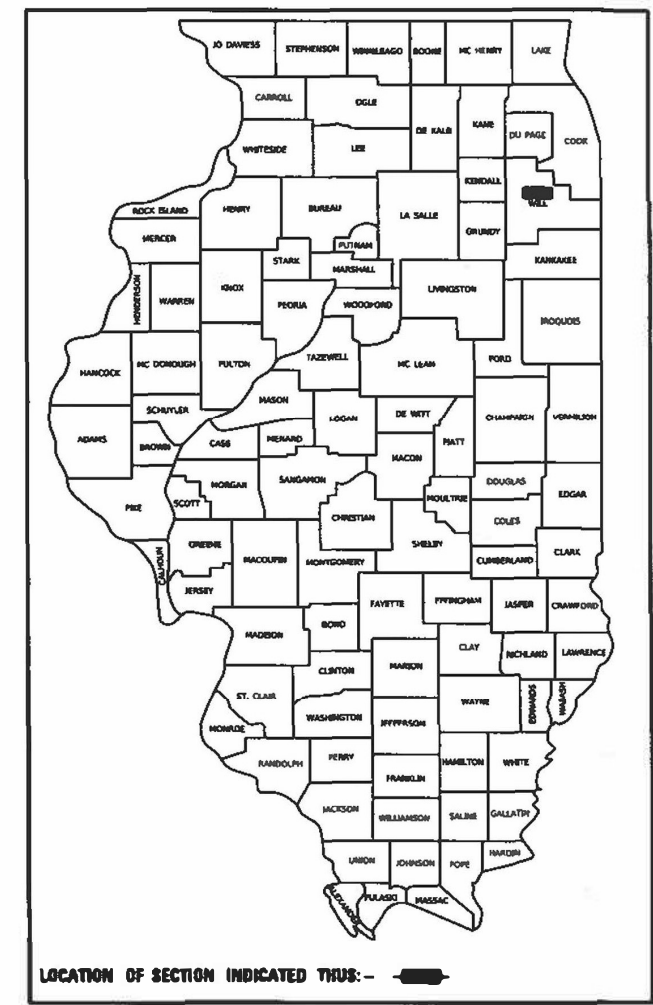


F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	1
FED. AID PROJECT		ILLINOIS	CONTRACT NO. 62P11	

D-91-164-21



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**PROPOSED  
HIGHWAY PLANS**

FAP ROUTE 112: IL 53 (RUBY STREET)  
OVER DES PLAINES RIVER  
SECTION 2021-074-BR&BP  
PROJECT NHPP-WX1F(924)  
BRIDGE REPAIR  
(S.N. 099-9901)  
WILL COUNTY

PRIMERA ENGINEERS LTD.  
ROBERT J. DEMING, P.E.  
DATE: 7/16/2023  
SIGNATURE AND SEAL  
APPLY TO DRAWINGS: 1-6, 15, 16  
EXPIRES: 11/30/2023

WSP USA, INC.  
Signed: *Robert Algazi*  
ROBERT ALGAZI, P.E. IL Lic. No. 062-072236  
EXPIRES 11-30-2023  
DATE: 07/16/2023  
SIGNATURE AND SEAL  
APPLY TO DRAWINGS: 7-14

FOR INDEX OF SHEETS, SEE SHEET NO. 2

THIS IMPROVEMENT IS LOCATED  
IN THE CITY OF JOLIET

**RUBY STREET TRAFFIC DATA:**  
FUNCTIONAL CLASSIFICATION  
OTHER PRINCIPAL ARTERIAL  
2019 ADT = 22,800  
POSTED SPEED LIMIT = 30 MPH



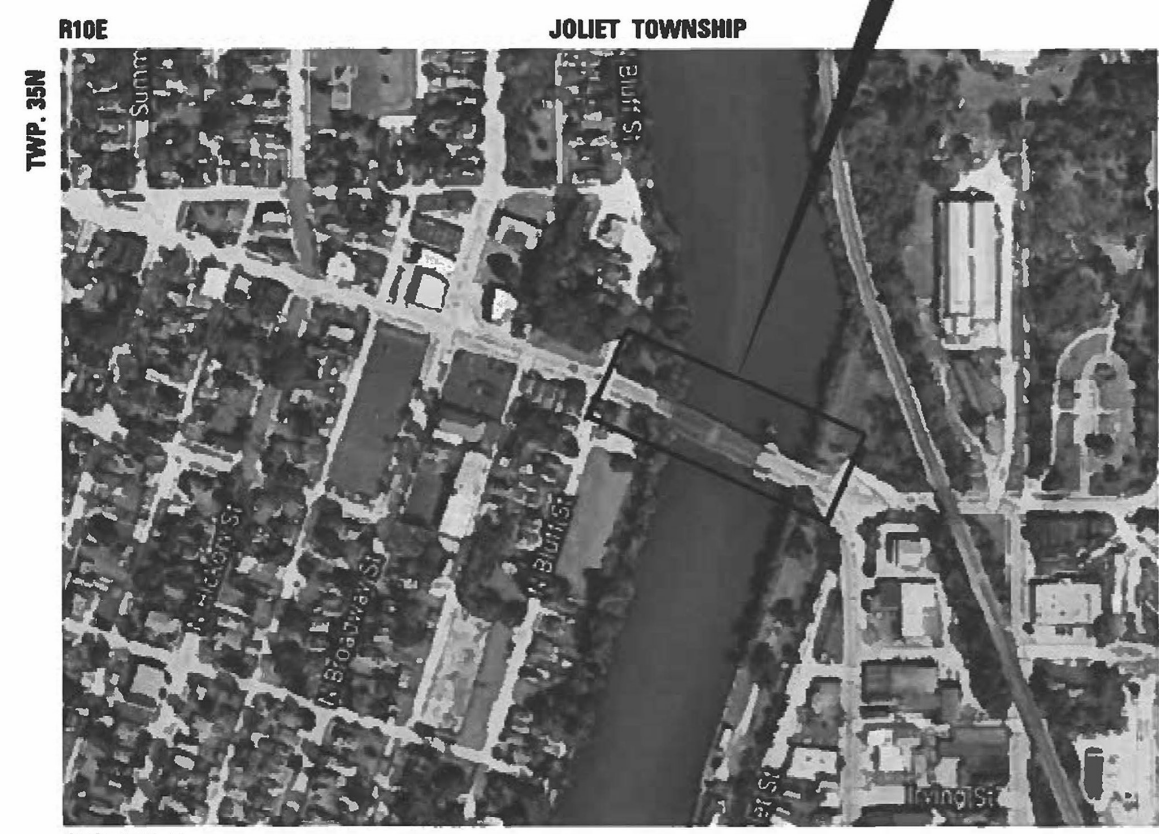
FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD  
ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT  
CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS  
ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATORS  
1-800-892-0123  
OR 811

PROJECT ENGINEER PRAVEEN KAINI, PE (847) 705-4237  
PROJECT MANAGER J. ALAIN MIDY, PE (847) 221-3056  
CONTRACT NO. 62P11

C-91-200-21

BRIDGE IMPROVEMENT  
SN 099-9901



SECTION 9  
GROSS LENGTH = 395 FT. = 0.075 MILE  
NET LENGTH = 395 FT. = 0.075 MILE

N  
LOCATION MAP  
NOT TO SCALE

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SUBMITTED July 17, 2023  
*Greg Bishop* REGIONAL ENGINEER  
August 18, 2023  
*Scott A. Etkin*  
ENGINEER OF DESIGN AND ENVIRONMENT  
August 18, 2023  
*Stephen McAnis*  
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY  
OF THE STATE OF ILLINOIS



## INDEX OF SHEETS

- 1 COVER SHEET
- 2 INDEX OF SHEETS, HIGHWAY STANDARDS & GENERAL NOTES
- 3 SUMMARY OF QUANTITIES
- 4 - 6 MAINTENANCE OF TRAFFIC DETOUR PLANS
- 7 - 14 MECHANICAL PLANS
- 15 - 16 D1 DETAILS

## HIGHWAY STANDARDS

000001-08	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
001006	DECIMAL OF AN INCH AND OF A FOOT
515001-04	NAME PLATE FOR BRIDGES
701601-09	URBAN LANE CLOSURE, MULTILANE, 1W OR 2W WITH NONTRAVERSABLE MEDIAN
701801-06	SIDEWALK, CORNER OR CROSSWALK CLOSURE
701901-08	TRAFFIC CONTROL DEVICES

## DISTRICT ONE STANDARD DETAILS

TC-10	TRAFFIC CONTROL AND PROTECTION FOR SIDE ROADS, INTERSECTIONS, AND DRIVEWAYS
TC-21	DETOUR SIGNING FOR CLOSING STATE HIGHWAYS

## GENERAL NOTES

1. ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE ILLINOIS DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" ADOPTED JANUARY 1, 2022, SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS AND SPECIAL PROVISIONS OF THE BUREAU OF DESIGN AND ENVIRONMENT. ANY REFERENCE TO A STANDARD IN THESE PLANS SHALL BE INTERPRETED TO MEAN JANUARY 1, 2022 EDITION.
2. THE CONTRACTOR SHALL CONTACT J.U.L.I.E. AT LEAST 48 HOURS PRIOR TO EXCAVATION TO DETERMINE WHICH UTILITIES ARE IN THE AREA.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTING AND MAINTAINING AN ELECTRONIC LOG OF ALL STAKEOUT SURVEY THAT IS PERFORMED ON THE JOB, EITHER BY HIM/HER OR ANY SUB-CONTRACTOR PERFORMING THE STAKEOUT. UPON REQUEST, ALL LOGS SHALL BE SUBMITTED TO THE DEPARTMENT. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS WORK, BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
4. THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN OF PROPOSED CONSTRUCTION PROCEDURES AND SEQUENCES FOR THE PROPOSED WORK ON THE BASCULE SPAN IN ACCORDANCE WITH GBSP 67, "STRUCTURAL ASSESSMENT REPORT FOR CONTRACTOR'S MEANS AND METHODS," TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING THIS WORK. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR OF ANY RESPONSIBILITY FOR THE STABILITY OF THE BRIDGE DURING THE REMOVAL AND REPLACEMENT OPERATIONS. TEMPORARY SUPPORT STRUCTURES REQUIRED TO ENSURE STABILITY OF THE BRIDGE DURING CONSTRUCTION SHALL BE PAID AS TEMPORARY SUPPORT SYSTEM.
5. WHEN THE LEAVES OF THE BASCULE SPAN ARE INOPERABLE IN THE FULL OPEN POSITION, THE LEAVES MUST BE SECURED. THE CONTRACTOR SHALL SUBMIT THE METHOD AND DETAILS FOR SECURING THE LEAVES IN FULL OPEN POSITION TO THE ENGINEER FOR APPROVAL. COST INCLUDED WITH TEMPORARY SUPPORT SYSTEM.
6. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND CONDITIONS EXISTING IN THE FIELD PRIOR TO CONSTRUCTION AND ORDERING OF MATERIALS.
7. BEFORE BEGINNING ANY WORK, THE CONTRACTOR SHALL RETAIN AND RECORD FOR FUTURE REFERENCE, ALL EXISTING PAVEMENT MARKING LINES AND RAISED REFLECTIVE PAVEMENT MARKERS THAT CONFLICT WITH TEMPORARY MARKINGS, IN ORDER THAT THESE LOCATIONS CAN BE RE-ESTABLISHED FOR PROPOSED STRIPING AT THE COMPLETION OF THIS CONTRACT. EXACT LOCATIONS OF ALL PROPOSED PAVEMENT MARKINGS SHALL BE DIRECTED BY THE RESIDENT ENGINEER.
8. THE CONTRACTOR WILL NOT BE ABLE TO SET UP A YARD OR FIELD OFFICE ON STATE PROPERTY WITHOUT WRITTEN PERMISSION FROM THE DEPARTMENT.
9. ALL DAMAGE TO EXISTING MARKINGS OR RAISED REFLECTIVE PAVEMENT MARKERS OUTSIDE THE REMOVAL LINE SHOWN ON THE PLANS SHALL BE REPLACED AT NO ADDITIONAL COST TO THE DEPARTMENT.
10. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, AS REQUIRED, PRIOR TO COMMENCING WITH CONSTRUCTION. THE COST SHALL BE INCIDENTAL TO THE CONTRACT.
11. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH UTILITY COMPANIES, AND THE CITY OF JOLIET.
12. THE CONTRACTOR SHALL OBTAIN COAST GUARD APPROVAL FOR ANY WORK THAT MAY INTERFERE WITH NAVIGATIONAL OPERATIONS OF THE NAVIGABLE WATERWAY. A WORK PLAN SHALL BE PREPARED BY THE CONTRACTOR, REVIEWED AND APPROVED BY THE ENGINEER AND BE SUBMITTED BY THE ENGINEER TO THE COAST GUARD AT THE ADDRESS LISTED BELOW FOR APPROVAL:

BRIDGE ADMINISTRATOR  
 US COST GUARD  
 EIGHTH COAST GUARD DISTRICT  
 1222 SPRUCE ST  
 ST. LOUIS, MO 63103-2832

## GENERAL NOTES (CONTINUED)

13. THE CONTRACTOR SHALL USE CARE NEAR ANY AND ALL EXISTING ITEMS THAT WILL NOT BE REMOVED. ANY DAMAGE DONE TO EXISTING ITEMS BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S OWN EXPENSE.
14. DO NOT SCALE PLANS FOR CONSTRUCTION DIMENSIONS.
15. DURING CONSTRUCTION OPERATIONS, IF ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINE OF DRAINAGE STRUCTURES SUCH THAT THE NATURAL FLOW OF WATER IS OBSTRUCTED, THE MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKDAY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL UTILITY STRUCTURES SHALL BE FREE FROM DUST AND DEBRIS. THE WORK SPECIFIED ABOVE WILL NOT BE PAID SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF CONTRACT.
16. ANY TRAFFIC CONTROL DEVICES ON THE BASCULE BRIDGE SHALL BE EITHER SECURED TO THE DECK OR REMOVED AND RESET EACH TIME THE BRIDGE IS RAISED FRO RIVER TRAFFIC.
17. IF A SIDEWALK IS CLOSED, PEDESTRIANS SHALL BE DETOURED TO THE ADJACENT SIDEWALK AT THE NEAREST CROSSWALK TO THE WORK ZONE ACCORDING TO STANDARD 701801

## COMMITMENTS

NONE.

## ILLINOIS DEPARTMENT OF TRANSPORTATION

1. THE CONTRACTOR SHALL CONTACT THE ARTERIAL TRAFFIC CONTROL SUPERVISOR, KALPANA KANNAN-HOSADURGA, A MINIMUM OF 72 HOURS PRIOR TO ANY TRAFFIC PATTERN CHANGES OR LANE CLOSURES, AND PROVIDE DETAILED DESCRIPTION OF THE TRAFFIC PATTERN REVISIONS AND RESPECTIVE DURATIONS IN HIS/HER AUTHORIZATION REQUEST.

UPON RECEIPT OF THE PERMIT AND AUTHORIZATION, THE CONTRACTOR SHALL SUBMIT A COPY TO THE ENGINEER FOR RECORDING. THE IDOT TRAFFIC CONTROL SUPERVISORS MAY BE CONTACTED AT:

KALPANA KANNAN-HOSADURGA  
 EMAIL: KALPANA.KANNAN-HOSADURGA@ILLINOIS.GOV

2. THE RESIDENT ENGINEER SHALL CONTACT THE AREA TRAFFIC FIELD ENGINEER ERIC CAMPOS AT ERIC.CAMPOS@ILLINOIS.GOV A MINIMUM OF TWO (2) WEEKS PRIOR TO PLACING THE PERMANENT PAVEMENT MARKINGS.

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS, HIGHWAY STANDARDS & GENERAL NOTES  
 RUBY STREET OVER DES PLAINES RIVER (S.N. 099-9901)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	2
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

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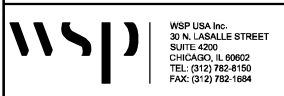


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CODE NO.	ITEM	UNIT	TOTAL QUANTITY	CONSTRUCTION CODE	
				BRIDGE	0013
			URBAN	80% FED 20% STATE	RUBY STREET SN 099-9901
67100100	MOBILIZATION	L SUM	1		1
X7010238	CHANGEABLE MESSAGE SIGN (SPECIAL)	CAL MO	9		9
X0326557	REFURBISHING OF OPERATING MACHINERY	L SUM	1		1
X0326559	NON-DESTRUCTIVE TESTING (NDT)	L SUM	1		1
X0326561	REPLACEMENT OF TRUNNION BEARING BOLTS AND ANCHOR BOLTS	L SUM	1		1
X6700407	ENGINEER'S FIELD OFFICE, TYPE A (D1)	CAL MO	15		15
X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1		1
Z0073500	TEMPORARY SUPPORT SYSTEM	L SUM	1		1
Z0073510	TEMPORARY TRAFFIC SIGNAL TIMING	EACH	17		17
Ø Z0076600	TRAINEES	HOURS	2000		2000
Ø Z0076604	TRAINEES - TRAINING PROGRAM GRADUATE	HOURS	2000		2000

**Reference Drawings Key**

- 1343-xx Original 1933 Design Plans
- 5075-xx Original 1935 Shop Drawings
- 60193-xx 2002 Bridge Rehabilitation Plans (Section M-B-DR-I-1)
- 62714-xx 2011 Bridge Repair Plans (Section M-BDR-1)
- 62A22-xx 2015 Bridge Repair Plans (Section 2014-078BR)
- 62B79-xx 2016 Bridge Repair Plans (Section M-BDR(BR))



USER NAME = USMA696622	DESIGNED -	REVISED -
	DRAWN - RM	REVISED -
PLOT SCALE = 2.0000' / in.	CHECKED - MPV	REVISED -
PLOT DATE = 7/19/2023	DATE -	REVISED -

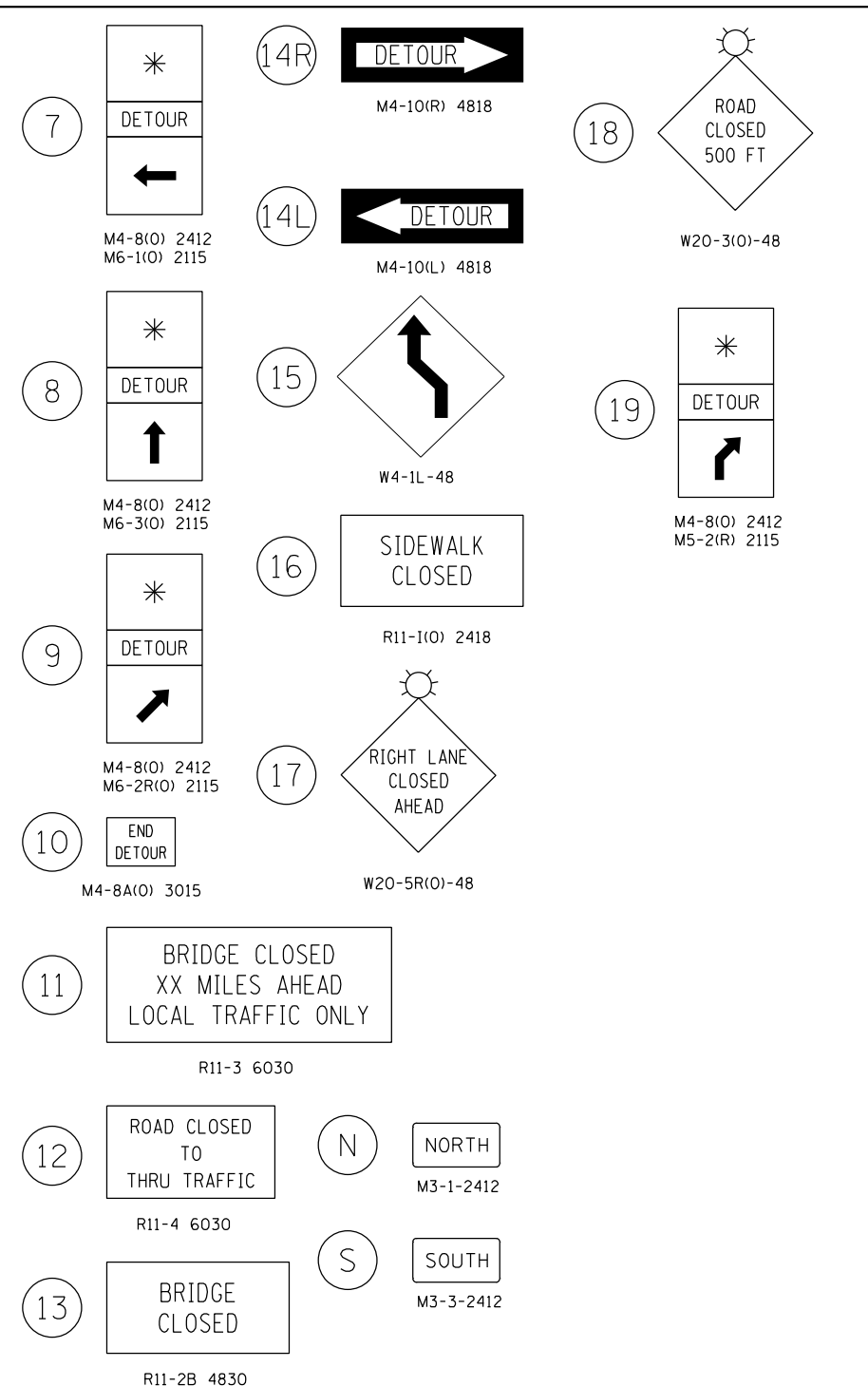
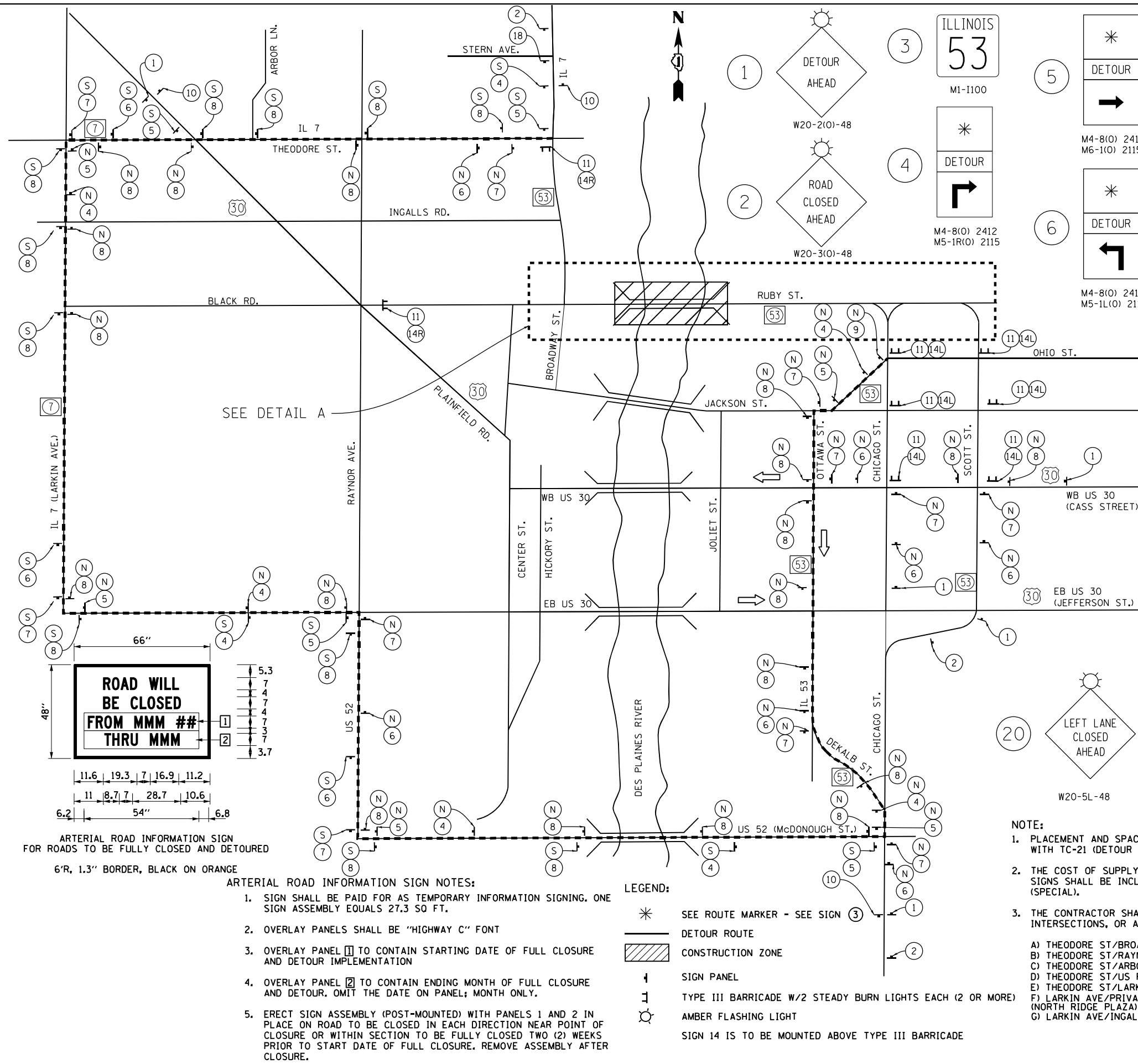
**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

SUMMARY OF QUANTITIES			
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS
112	2021-074-BR&BP	WILL	16
			SHEET NO. 3
CONTRACT NO. 62P11			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

ILLINOIS		FED. AID PROJECT
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Ø 0042

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 401 N. JACKSON BLVD, SUITE 400, CHICAGO, IL 60604, P. 312-460-4000 F. 312-460-4001



**ARTERIAL ROAD INFORMATION SIGN**  
 FOR ROADS TO BE FULLY CLOSED AND DETOURED  
 6'R, 1.3" BORDER, BLACK ON ORANGE

- ARTERIAL ROAD INFORMATION SIGN NOTES:**
- SIGN SHALL BE PAID FOR AS TEMPORARY INFORMATION SIGNING. ONE SIGN ASSEMBLY EQUALS 27.3 SQ FT.
  - OVERLAY PANELS SHALL BE "HIGHWAY C" FONT
  - OVERLAY PANEL 1 TO CONTAIN STARTING DATE OF FULL CLOSURE AND DETOUR IMPLEMENTATION
  - OVERLAY PANEL 2 TO CONTAIN ENDING MONTH OF FULL CLOSURE AND DETOUR. OMIT THE DATE ON PANEL; MONTH ONLY.
  - ERECT SIGN ASSEMBLY (POST-MOUNTED) WITH PANELS 1 AND 2 IN PLACE ON ROAD TO BE CLOSED IN EACH DIRECTION NEAR POINT OF CLOSURE OR WITHIN SECTION TO BE FULLY CLOSED TWO (2) WEEKS PRIOR TO START DATE OF FULL CLOSURE. REMOVE ASSEMBLY AFTER CLOSURE.

- LEGEND:**
- \* SEE ROUTE MARKER - SEE SIGN 3
  - DETOUR ROUTE
  - ▨ CONSTRUCTION ZONE
  - ⊥ SIGN PANEL
  - ⊥ TYPE III BARRICADE W/2 STEADY BURN LIGHTS EACH (2 OR MORE)
  - ⊙ AMBER FLASHING LIGHT
- SIGN 14 IS TO BE MOUNTED ABOVE TYPE III BARRICADE

- NOTE:**
- PLACEMENT AND SPACING OF SIGNS AND BARRICADES SHALL BE IN ACCORDANCE WITH TC-21 (DETOUR SIGNING FOR CLOSING STATE HIGHWAYS).
  - THE COST OF SUPPLYING, ERECTING AND MAINTAINING BARRICADES, WARNING LIGHTS AND SIGNS SHALL BE INCLUDED IN THE CONTRACT COST OF TRAFFIC CONTROL AND PROTECTION (SPECIAL).
  - THE CONTRACTOR SHALL DEVELOP AND MAINTAIN APPROPRIATE SIGNAL TIMINGS FOR THE FOLLOWING INTERSECTIONS, OR AS DIRECTED BY THE ENGINEER

- A) THEODORE ST/BROADWAY ST H) LARKIN AVE/BLACK RD O) RAYNOR AVE/MARION AVE  
 B) THEODORE ST/RAYNOR AVE I) LARKIN AVE/GLENWOOD AVE P) RAYNOR AVE/MCDONOUGH ST  
 C) THEODORE ST/ARBOR LN J) LARKIN AVE/JEFFERSON ST Q) MCDONOUGH ST/CHICAGO ST  
 D) THEODORE ST/US ROUTE 30 K) JEFFERSON ST/STRYKER AVE  
 E) THEODORE ST/LARKIN AVE L) JEFFERSON ST/MIDLAND AVE  
 F) LARKIN AVE/PRIVATE DRIVE M) JEFFERSON ST/REED ST (NORTH RIDGE PLAZA)  
 G) LARKIN AVE/INGALLS AVE N) JEFFERSON ST/RAYNOR AVE



USER NAME = USMA696622	DESIGNED -	REVISED -
DRAWN - RM	REVISOR -	
CHECKED - MPV	REVISOR -	
DATE - 7/19/2023	REVISOR -	

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**MAINTENANCE OF TRAFFIC DETOUR PLANS**  
**RUBY STREET OVER DES PLAINES RIVER (S.N. 099-9901)**

F.A.P. RTE. 112	SECTION 2021-074-BR&BP	COUNTY WILL	TOTAL SHEETS 16	SHEET NO. 4
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

SCALE: SHEET OF SHEETS STA. TO STA.





200'  
FOR LEFT LANE CLOSURE,  
MATCH EXISTING SKIP LINE  
PATTERN  
ARROW BOARD  
15 DRUMS MIN.  
Ø25" IN TANGENT  
Ø10" IN CURVE

TEMP. 4" YELLOW STRIPE  
WITH DRUMS 1' OFFSET

BROADWAY ST.

RUBY ST.

BLUFF ST.

DES PLAINES RIVER

90' SHIFT  
TAPER

CLOSE LANE 2 BEFORE TURN ONTO RUBY  
UTILIZING IDOT STANDARD 701601

CLOSE OFF ACCESS TO LANE 2 FROM WB  
COLUMBIA ST. CHANNELIZE TRAFFIC INTO  
LANE 1.

COLUMBIA ST.

180° LANE  
CLOSURE  
TAPER

SCOTT ST.

AT RENTAL  
MAX DRIVEWAY  
R3-1 (24" X 24")

DRUMS Ø 20' C-C  
CHANNELIZING ALL  
TRAFFIC FROM WB  
RUBY ST. TO SB  
CHICAGO ST.

LIBERTY ST.

CHICAGO ST.

JOILET ST.

**LEGEND:**

- ⊙ DRUM W/STEADY BURNING LIGHT
- ⊥ TYPE III BARRICADE W/2 STEADY BURN LIGHTS EACH (2 OR MORE)
- ⊥ SIGN PANEL
- ⊥ SIGN 14 IS TO BE MOUNTED ABOVE TYPE III BARRICADE
- ➔ ARROW BOARD

DETAIL A

SEE SHEET 4 FOR SIGN LEGEND

MODEL: Default  
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 460 N. JACKSON BLVD, SUITE 400, CHICAGO, IL 60611, P.312-460-4000 F.312-460-4015



USER NAME = USMA696622  
 DRAWN - RM  
 CHECKED - MPV  
 DATE - 7/19/2023

DESIGNED -  
 DRAWN - RM  
 CHECKED - MPV  
 DATE -

REVISED -  
 REVISED -  
 REVISED -  
 REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**MAINTENANCE OF TRAFFIC DETOUR PLANS  
 RUBY STREET OVER DES PLAINES RIVER (S.N. 099-9901)**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	6
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

**General Machinery Notes:**

- The Contractor shall perform all work in accordance with these Contract Drawings, the Contract Specifications, and all other Contract Documents as defined within the specifications. Any reference to the specifications includes references to all supplemental specifications, special provisions, and specifications referenced herein.
- The existing details, dimensions, and elevations shown on these plans have been obtained from record drawings and field measurements on the existing structure. The Contractor shall perform a field survey to verify all dimensions affecting fabrication or construction. Shop and construction drawings shall indicate field verified dimensions. Payment for completing the field survey shall be considered as included within the cost for fabrication of materials affected.
- Details of machinery shall conform to the 2007 Standard Specifications for Movable Highway Bridges published by the American Association of State Highway and Transportation Officials, and all interim revisions.
- Provide ASTM F3125 Grade 325 or ASTM A449 H.S. (High strength) turned bolts as required to connect machinery to structural steel. All H.S. turned bolts shall have an ANSI B4.1 LC6 clearance between the body of the bolt and the hole. All turned bolts shall have double nuts. All H.S. Fasteners shall have a hardened plain washer under the head and the nut. New turned bolt shall not be torqued more than once. Replacement of turned bolts shall be of the same nominal size as existing except as shown. Bolt area and bolt holes shall be cleaned by a wire brush before new bolt installation.
- Refer to the Specifications for all fastener requirements.
- Machinery dimensions shown on drawings are dimensions after machining.
- All dimensions for machine finished surfaces shall be held to 0.01 inch except as otherwise required, shown on the plans, by Specifications or as directed by the Engineer.
- Fits and finishes for machinery shall be as follows:

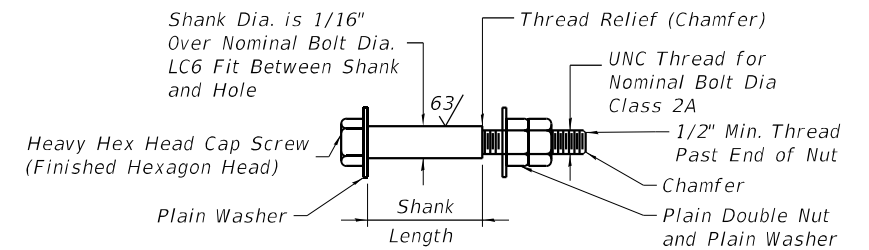
Surface Fit	(Per ANSI B4.1)	Finished (µin)
Machinery Parts in Fixed Contact	-	125
Shaft Journal	RC6	8
Journal Bushings	RC6	16
Solid Bushing in Base (To 1/4" Wall)	FN1	63
Solid Bushing in Base (Over 1/4" Wall)	FN2	63
Hubs on Shaft (To 2" Bore)	FN2	32
Hubs on Shaft (Over 2" Bore)	FN2	63
Split Bushing in Base	LC1	125
Sliding Bearings	RC6	32
Keys and Keyways (Top & Bottom)	LC4	63
Keys and Keyways (Sides)	FN2	63
Shafts	-	63
Turned Bolts in Finished Holes	LC6	63

The above fits for cylindrical parts shall also apply to the dimensions of non-cylindrical parts.

- The Contractor shall perform all work with care such that any materials that are to remain in place, that are to be re-used, or that are to remain the property of The Department will not be damaged. If the Contractor damages any such material, the damaged materials shall be repaired or replaced in manner satisfactory to the Engineer, at no additional cost to The Department.
- Where new steel is to be connected to existing steel, the existing surfaces shall be cleaned to bare steel of all paint, loose rust, and other foreign material, then, painted with one coat of primer prior to the installation of new material. Existing paint shall be cleaned from all areas within 2 inches of high strength bolts. The cost for this cleaning shall be included in the cost for installation of new material.
- The existing machinery components coating may contain lead. The Contractor shall take appropriate precautions to deal with the present of lead on this project in accordance with Local and State Requirements.
- The Contractor shall submit to the Engineer final design, drawings, and design calculations of temporary access, construction platforms, and temporary protective shields.
- The Contractor shall submit sketches showing the method of lifting or lowering the materials. The Contractor shall propose locations of support or hanging of the lifting equipment. The Contractor shall obtain the Engineer's approval for these location and connection details. The Contractor shall also identify any sections of the machinery room enclosure which need to temporarily be removed for access to the machinery and provide detail on method of removal and reinstallation of the housing.
- Drawings shall be fully dimensioned and shall show existing members, drawings, and calculations shall each bear the signature and raised, embossed seal of the designer, who shall be a Licensed Structural Engineer in the State of Illinois. Drawings shall conform to the requirements stated in the Specifications.
- The Contractor shall not disturb any existing utilities except as specifically defined within the scope of work for this Contract. Where work affects or is affected by the existing utilities, the work shall be coordinated with the Department. Utility work is not anticipated as a part of this contract.
- The Contractor shall ensure that when the bridge is kept in the open position, the approved temporary span supports are in place.

- Machinery dimensions shown on the drawings are dimensions after machining. Unless otherwise indicated or required for the proper assembly of part, dimensional tolerances for machinery in general shall be as follows:

Surface Straightness	± 0.010
Flatness	∇ 0.010
Parallelism	// 0.005 -
Perpendicularity (Per Lineal Ft.)	⊥ 0.005 -
Angularity (Per Lineal Ft.)	∠ 0.02 -
Positions (Features within a component)	⊕ 0.02 -
Concentricity	◎ 0.005 -
Circular Runout	↗ 0.005 -



**TYPICAL HS TURNED BOLT DETAIL**  
Shank Length to be 1/4" Less Than Grip Thickness of Connection

**Index of Sheets**

Mechanical	
M-01	General Machinery Notes
M-02	Mechanical Plan and Elevation
M-03	Span Drive Machinery Repairs
M-04	Span Drive Machinery Repair Details 1
M-05	Span Drive Machinery Repair Details 2
M-06	Span Drive Machinery Repair Details 3
M-07	Spare Pinion and Pinion Shaft
M-08	Spare Gear "B"

**Pay Item List and Scope of Work:**

ID No.	Pay Item No.	Pay Item	Unit	Qty.	Description
1	Item X0326557	Refurbishing of Operating Machinery	Lump Sum	1	A. Rehabilitate Pinion Bearings And Shaft Assemblies. B. Furnish and Install where directed a new Spare Pinion Shaft, Pinion Gear, Gear 'B', and All Associated Components. C. Clean, Paint And Lubricate All Existing Span Drive Assemblies And Associated Components.
2	Item X0326559	Non-Destructive Testing (NDT)	Lump Sum	1	A. Perform NDT Testing On All Existing Trunnion Shafts, Main Pinion Shafts, and Existing Main Pinion Shaft Bearing Bushings.
3	Item X0326561	Replacement of Trunnion Bearing Bolts and Anchor Bolts	Lump Sum	1	A. Rehabilitate Trunnion Bearings And Shaft Assemblies. B. Clean, Paint, and Lubricate All Existing Trunnion Assemblies And Associated Components.
4	Item Z0073500	Temporary Support System	Lump Sum	1	A. Provide a Temporary Span Support System to support the Bridge in the open position.
5	Item Z0076700	Trunnion Bearing Grease Groove Cleaning	Lump Sum	1	A. Clean Trunnion Bearing Assembly Grease Grooves



Signed Robert Algazi

Date 07/19/2023

SHEETS M1-M8

MODEL: Default  
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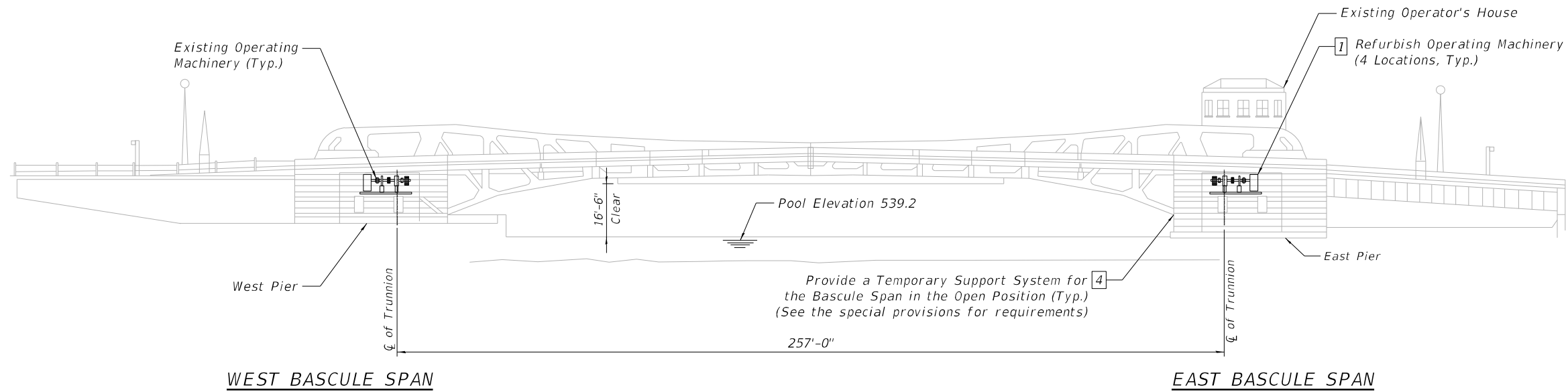
**STATE OF ILLINOIS  
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**GENERAL MACHINERY NOTES  
STRUCTURE NO. 099-9901**

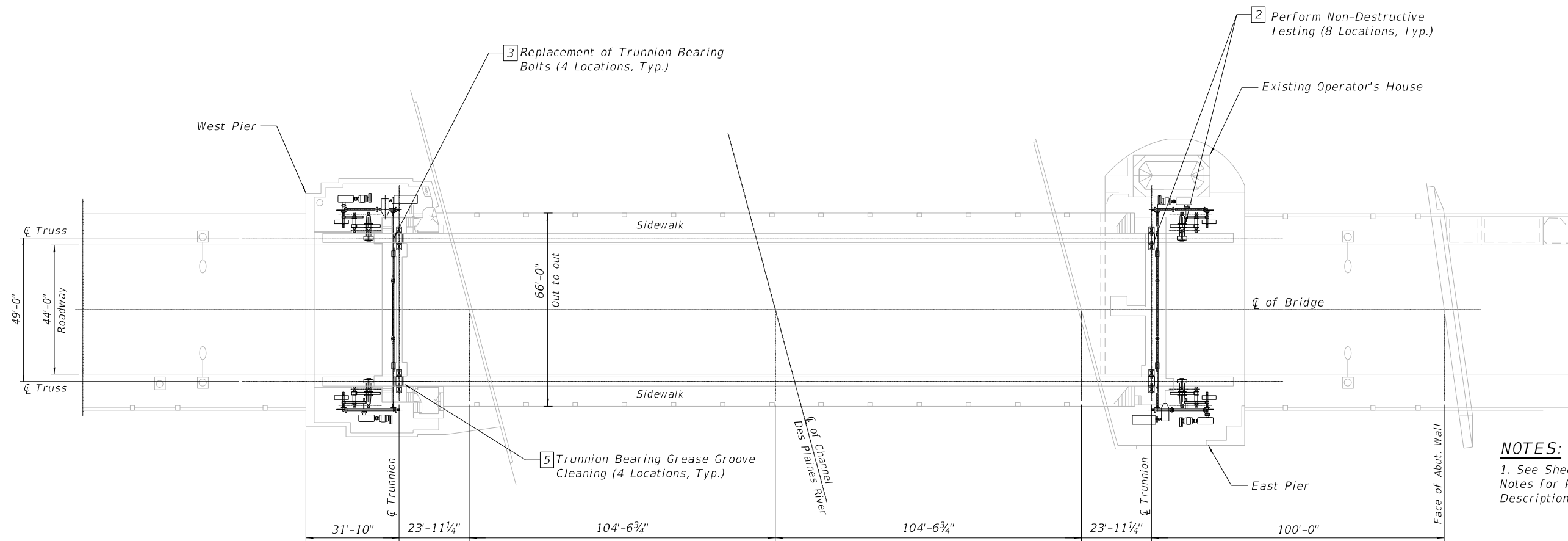
SHEET M-1 OF M-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	7
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

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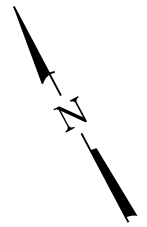


**ELEVATION**  
 Scale 1" = 20'-0"



**PLAN**  
 Scale 1" = 20'-0"

**NOTES:**  
 1. See Sheet M-1 General Machinery Notes for Payitems And Work Descriptions.



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**MECHANICAL PLAN AND ELEVATION**  
**STRUCTURE NO. 099-9901**

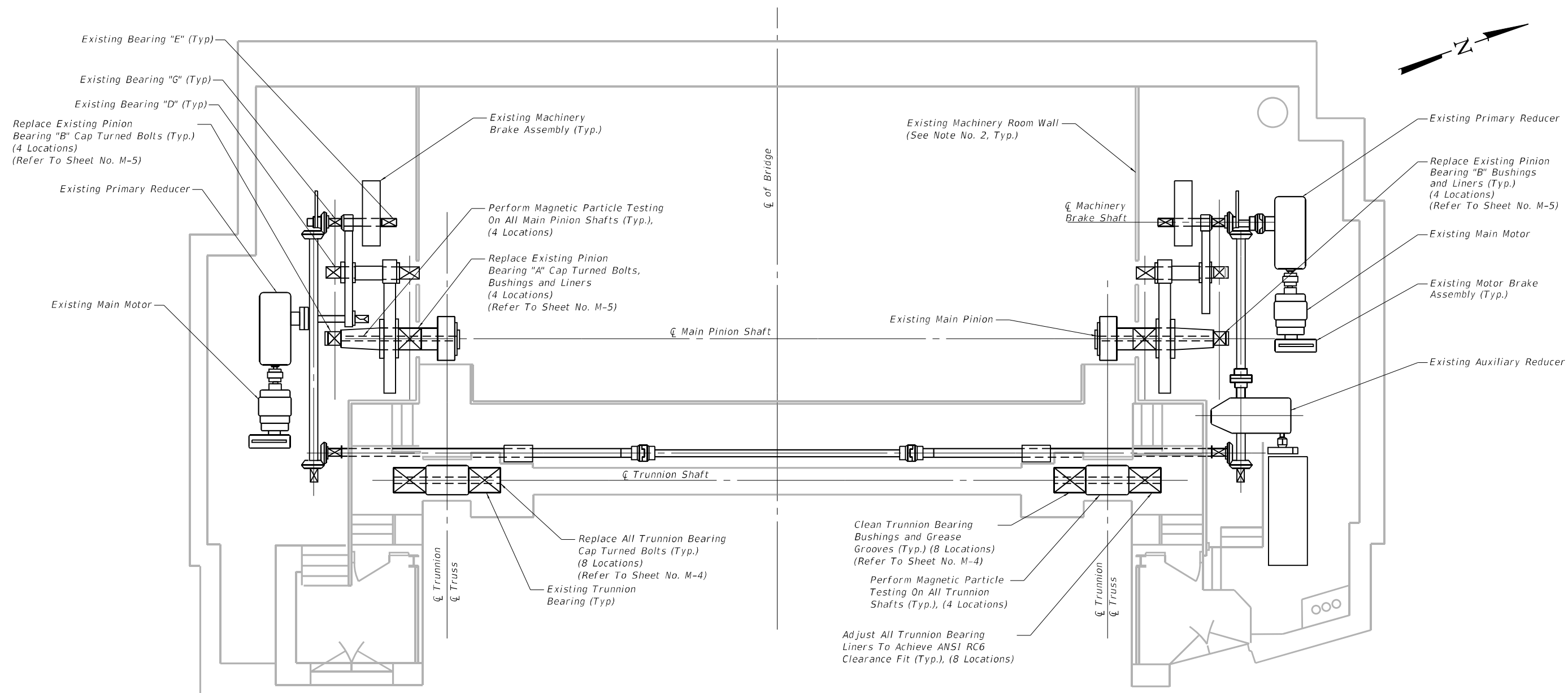
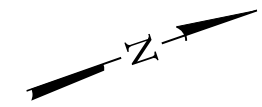
SHEET M-2 OF M-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	8
CONTRACT NO. 62P11				

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**MACHINERY PLAN**  
 Scale 1/4" = 1'-0"  
 (West Leaf Shown, East Leaf Similar)

**NOTES:**

1. Refer to sheet No. M-1 for General Machinery Notes.
2. If required, temporarily remove the existing machinery room wall to provide access to the pinion bearing assemblies. Refer to the Mechanical Special Provisions for additional requirements.
3. Refer to the Mechanical Special Provisions for non-destructive testing requirements.
4. Provide a temporary span support system to keep the bridge in the open position during periods when on-going work would impact bridge operation. Temporary span supports shall be in place prior to start of this work. Refer to the Special Provisions for requirements.
5. Refer to sheet M-1 for typical HS turned bolt detail and typical machinery weldment details.

TABLE OF NEW MACHINERY COMPONENTS		
COMPONENT	QNTY	MODEL/MATERIAL (OR APPROVED EQUAL)
Trunnion Bearing Liner	8	ASTM B16 Copper Alloy C3600
Pinion Bearing Liner	8	ASTM B16 Copper Alloy C3600
Pinion Bearing Bushing	8	ASTM B22 Alloy UNS C91100



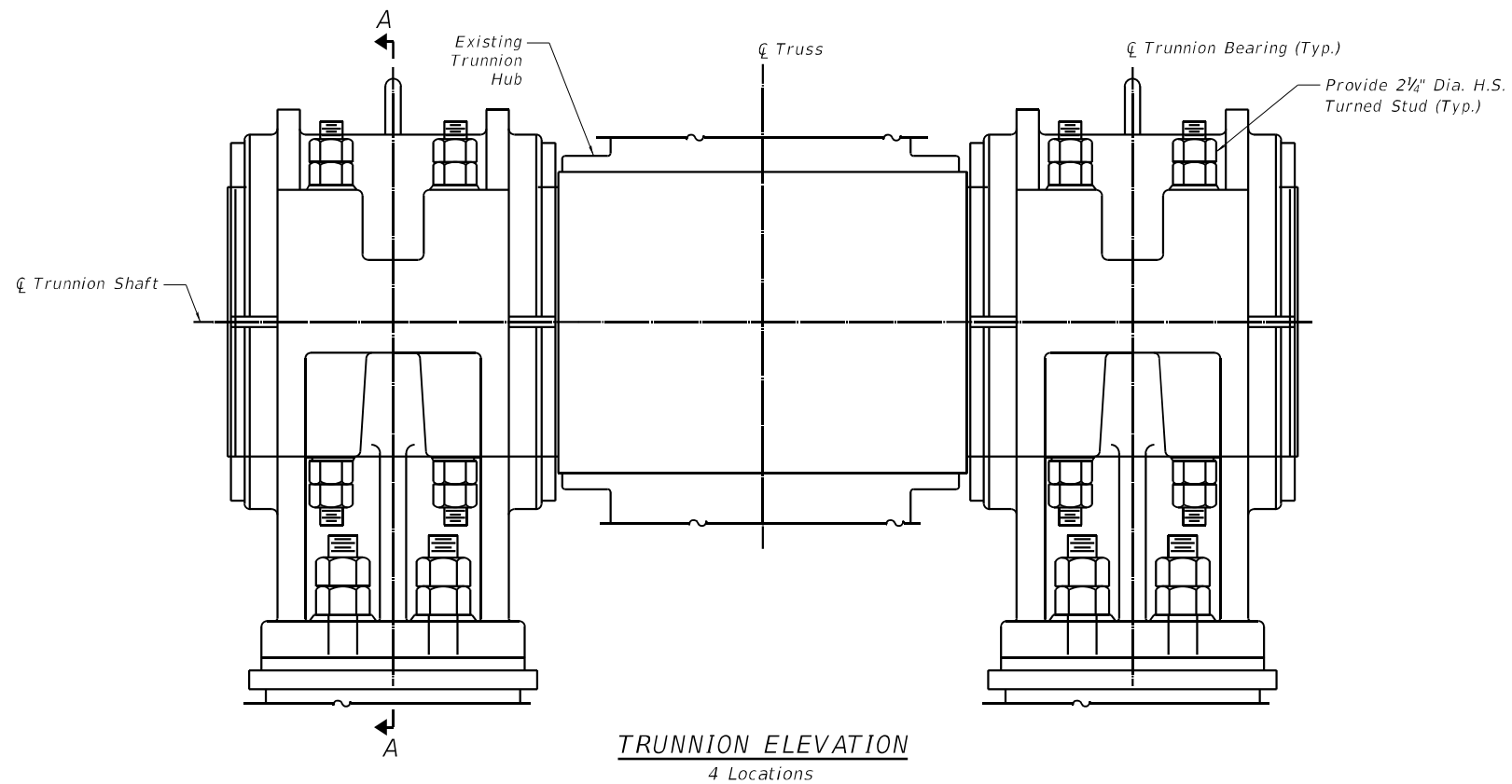
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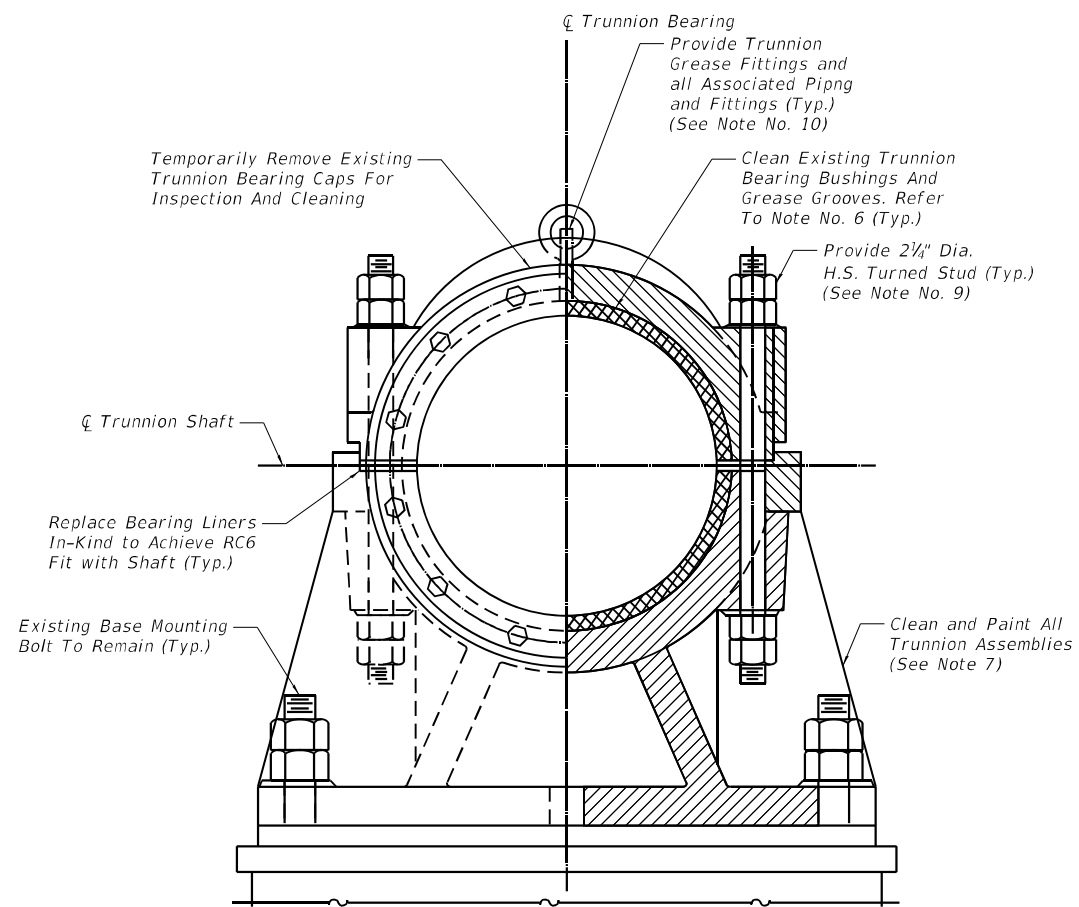
**SPAN DRIVE MACHINERY REPAIRS  
 STRUCTURE NO. 099-9901**

SHEET M-3 OF M-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	9
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				



**TRUNNION ELEVATION**  
4 Locations



**SECTION A-A**  
Scale: 1 1/2" = 1'-0"

**NOTES:**

1. Refer to sheet No. M-1 for general machinery notes.
2. Contractor to field verify all dimensions prior to start of construction.
3. The Contractor shall take precautions to prevent debris contamination of the bearing journals. The Contractor shall cover all grease grooves, passages and interface locations between the journal and bushing to prevent ingress of contaminants. Contractor shall provide detailed procedures and/or drawings of debris ingress prevention measures for approval by the Engineer.
4. All size fasteners shown on the drawings are based on available drawings and are for references only. Contractor shall verify all fastener sizes and mating hole diameters.
5. Perform trunnion work with bridge closed to traffic and temporary supports in place. Contractor shall not rotate trunnion shaft (raise or lower leaf) when bearing cap is removed.
6. Clean and purge out trunnion bearing bushing grease grooves and ports. Clean and polish all accessible trunnion shaft surfaces. Refer to the Mechanical Special Provisions for grease groove and port cleaning requirements.
7. Clean and paint trunnion assemblies in accordance with the Mechanical Special Provisions.
8. Contractor shall ensure that all bearing lubrication passages are open, clear, and able to transmit lubricant to the bearing to the satisfaction of the Engineer.
9. New turned stud shanks to be 1/16" larger in diameter than the existing turned stud shank diameter. Field verify all turned studs and mating hole diameters to ensure required turned studs match per Specifications and Contract Plans.
10. All new grease fittings and all associated piping and fittings shall be the same size as the existing grease fittings.

**NON-DESTRUCTIVE TEST (NDT) REQUIREMENTS**

1. Temporarily remove existing trunnion bearing caps and perform Magnetic Particle Testing of the trunnion shafts. Testing shall be performed by a qualified technician certified by the American Society for Non-Destructive Testing (ASNT) level 2. Acceptance criteria shall be per AWS D1.1.
2. Lubricate all trunnion assemblies after performing Non-Destructive testing of all shafts.

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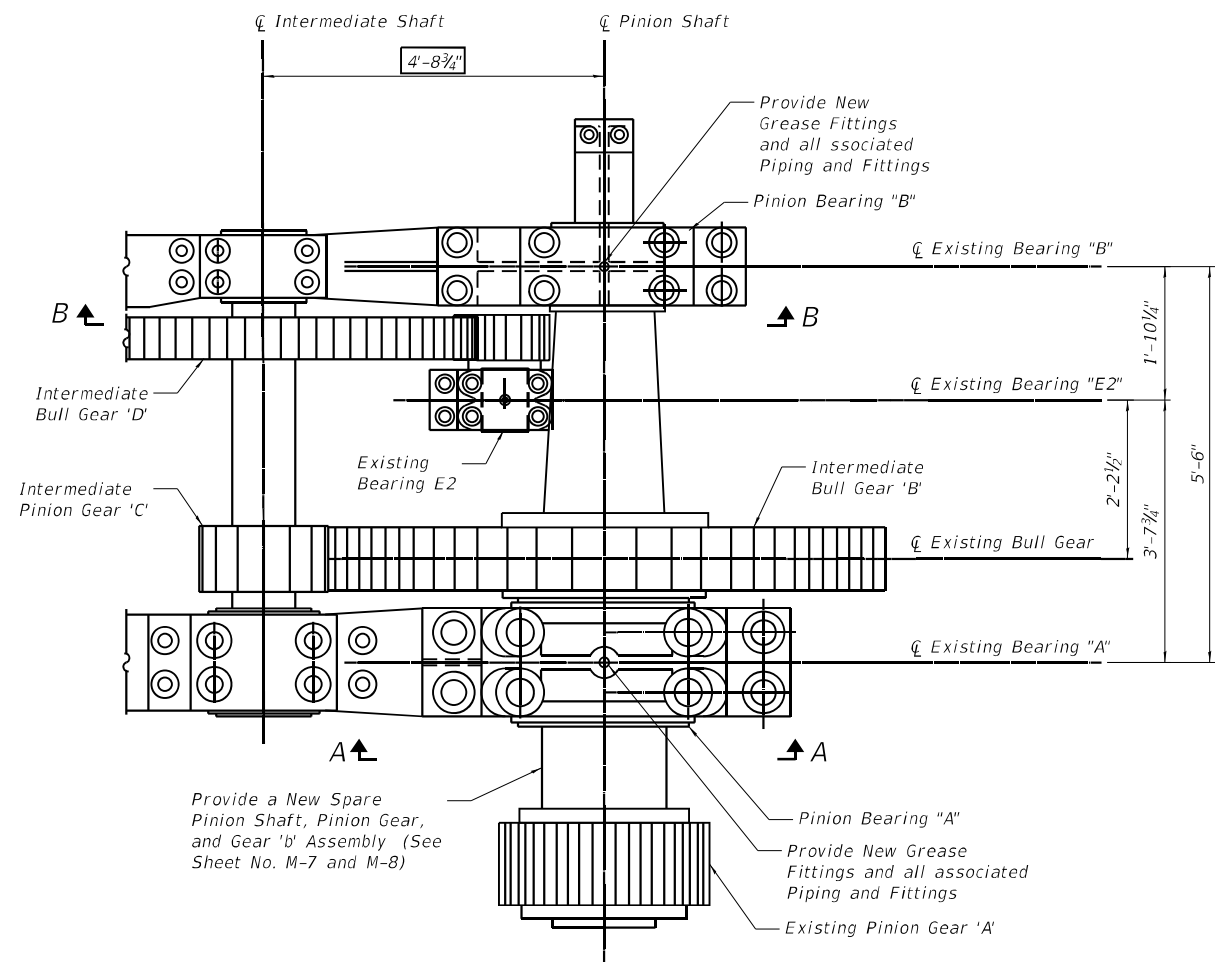
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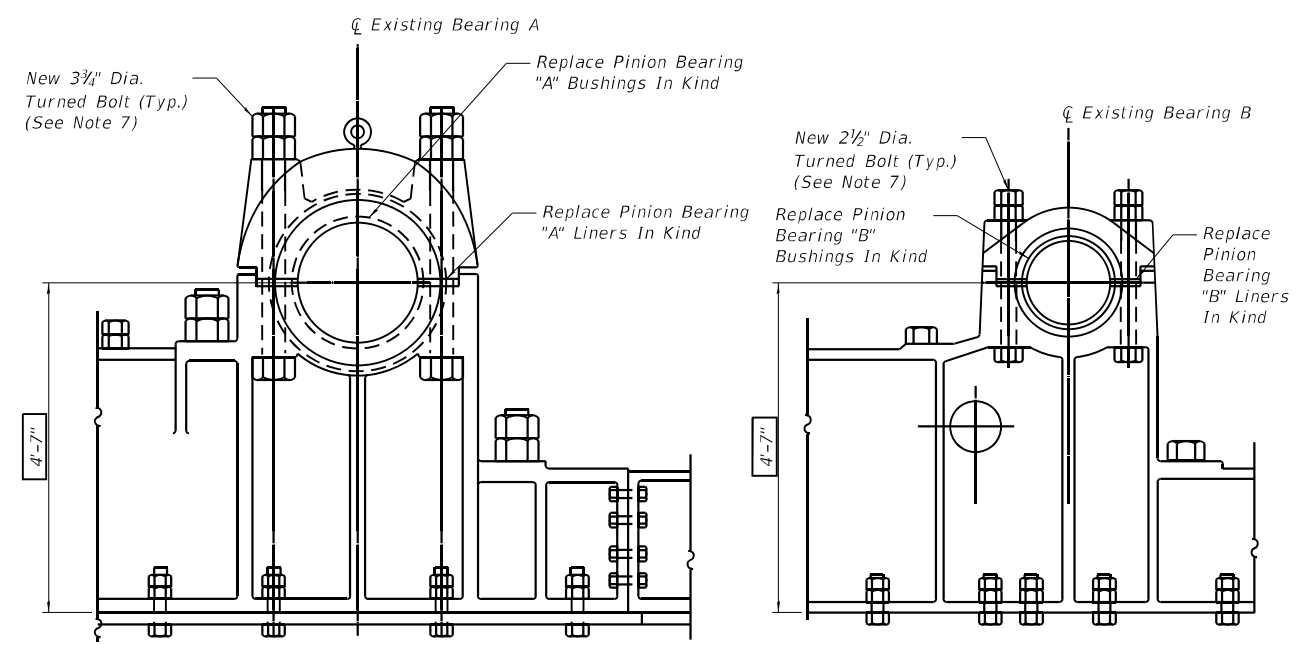
**SPAN DRIVE MACHINERY REPAIR DETAILS 1**  
**STRUCTURE NO. 099-9901**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 62P11				
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**SOUTH PINION SHAFT AND BEARING ASSEMBLY PLAN**  
(West Machinery Similar In Bearing Location Only)



**PINION SHAFT BEARING ELEVATION**

**NOTES:**

- For general machinery notes, see sheet No. M-1.
- The Contractor shall field verify all dimensions before beginning fabrication and installation.
- X-XX" - Symbol indicates at a minimum, field verify and maintain alignment with existing machinery at the field verified distance.
- The Contractor shall take precautions to prevent debris contamination of the bearing journals. The Contractor shall temporarily cover all grease grooves, passages and interface locations between the journal and bushing to prevent ingress of contaminants. Contractor shall provide detailed procedures an/or drawings of debris ingress prevention measures for approval by the Engineer.
- Contractor shall ensure that all bearing lubrication passages are open, clear, and able to transmit lubricant to bearings to the satisfaction of the Resident Engineer.
- All size fasteners shown on the drawings are based of available drawings and are for references only. Contractor shall verify all dimensions.
- New turned bolt shanks to be 1/16" larger in diameter than existing turned bolt shank diameter. Field verify all turned bolt and mating hole diameters to ensure required turned bolt fit per Specifications and Contract Plans.
- Where replacement of existing fasteners is not required, the existing fasteners are to be thoroughly cleaned and painted.
- Pinion assembly and pinion bearing bushing work shall only be performed with the bridge locked in the open position using the approved temporary span support system. Contractor shall not rotate pinion shaft (raise or lower leaf) when bearing cap is removed, unless bushings are securely fastened.
- Provide one new Spare Pinion Shaft, Pinion Gear, and Gear 'b' Assembly. The new spare assembly shall be used to replace one existing pinion shaft assemblies based on the results of the visual and NDT inspection of the existing shafts and at the direction of the Engineer. See Sheets No. M-7 and M-8 for details and the Special Provisions for additional requirements.
- Machine new pinion bearing bushings in order to provide required open gearing alignment tolerances. Measure alignment of open gearing before disassembly of any machinery components. Refer to the Mechanical Special Provisions for Requirements.
- Field machine/hand dress all existing pinion shaft bearing areas to remove any burrs or raised areas and bring the shaft surface to a 63-microinch finish.

**NON-DESTRUCTIVE TEST (NDT) REQUIREMENTS**

- Perform Magnetic Particle Testing of the existing pinion shafts at the pinion shaft support bearing locations and radii, and of all existing bearing bushings. Testing shall be performed by a qualified technician certified by the American Society for Non-Destructive Testing (ASNT) level 2. Acceptance criteria shall be per AWS D1.1.
- Perform a visual inspection of all existing pinion shaft assemblies and bearing bushing.
- Visual inspection and non-destructive testing shall be witness by the Engineer unless otherwise directed.
- Lubricate all pinion assemblies after performing Non-Destructive Testing of all shafts.

**SUGGESTED BUSHING REPLACEMENT PROCEDURE:**

- Prior to start of pinion bearing work, ensure the span temporary support system is in place and the bridge is supported in the open position unless otherwise approved.
- Temporarily remove existing machinery room enclosure walls as required to provide access to pinion bearings.
- Measure and record existing pinion shaft alignment. Submit for review and approval.
- Remove existing bearing caps and cap bolts. Clean all existing pinion bearing shafts.
- Inspect exposed pinion shafts. Perform NDT testing of all pinion shafts as required. Report testing results to the Engineer. Where required and as directed by the Engineer, replace the existing pinion and pinion shaft with the span pinion shaft assembly.
- Remove the existing pinion shaft. Machine/polish existing pinion shaft bearing areas as required. Measure and record existing pinion shaft diameters at bearing areas for developing bushing shop drawings.
- Remove the existing pinion bearing bushings. Measure existing dimensions for developing bushing shop drawings.
- Inspect and NDT test all existing bearing bushings. Report testing results to the Department. Bearings that are salvageable shall be cleaned, machined, and returned to the Department as spares.
- Measure bore in the existing bearing cap and base and report to the Engineer. If required and approved, machine bearing cap and base as required and repeat measurement. Final approved measurements shall be used for the corresponding new bearing bushings.
- Machine new bearing bushings based on the field verified measurements. Undersize the shaft bore in the bushing halves.
- Install bushing into bearing. Measure the remaining machining required to achieve desired shaft alignment. Submit measurements for review and approval.
- Final machine bearing bushings per approved measurements.
- Install final machined bushing. Reinstall pinion shaft in bushing and measure shaft alignment.
- Reassemble pinion bearings and adjust bearing liners to achieve required bearing clearances.
- Measure and confirm final alignment. Submit final alignment for review and approval.
- Lubricate pinion bearing assembly.
- Remove temporary span support system only after all related work is completed.
- Test the bridge operation as required in the specifications.



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**SPAN DRIVE MACHINERY REPAIR DETAILS 2  
STRUCTURE NO. 099-9901**

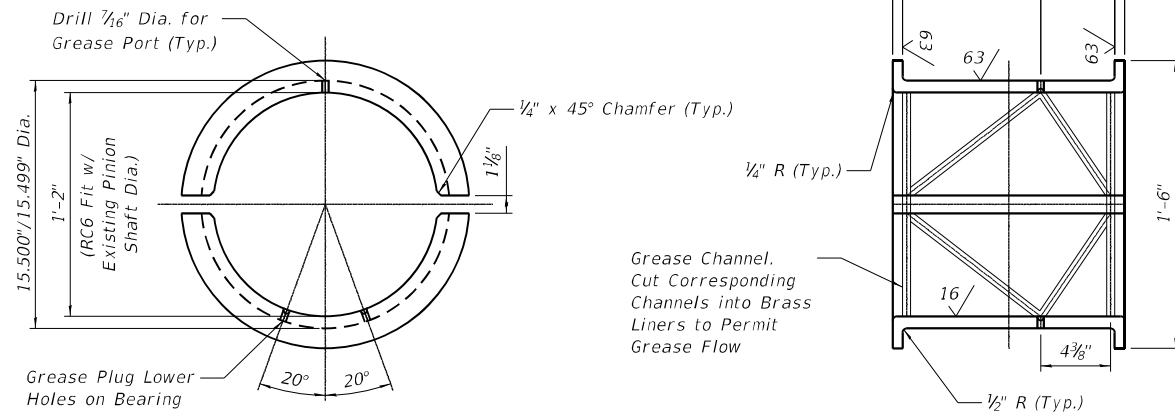
SHEET M-5 OF M-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

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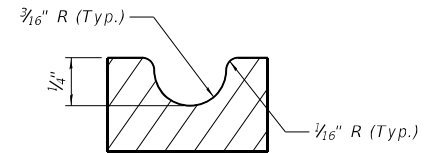
**NOTES:**

1. For general machinery notes, see sheet No. M-1.
2. The dimensions shown are based on available as-built plans. The Contractor shall field verify all dimensions before beginning fabrication and installation to confirm proper fit up with existing bearing housing and shafts at each location.



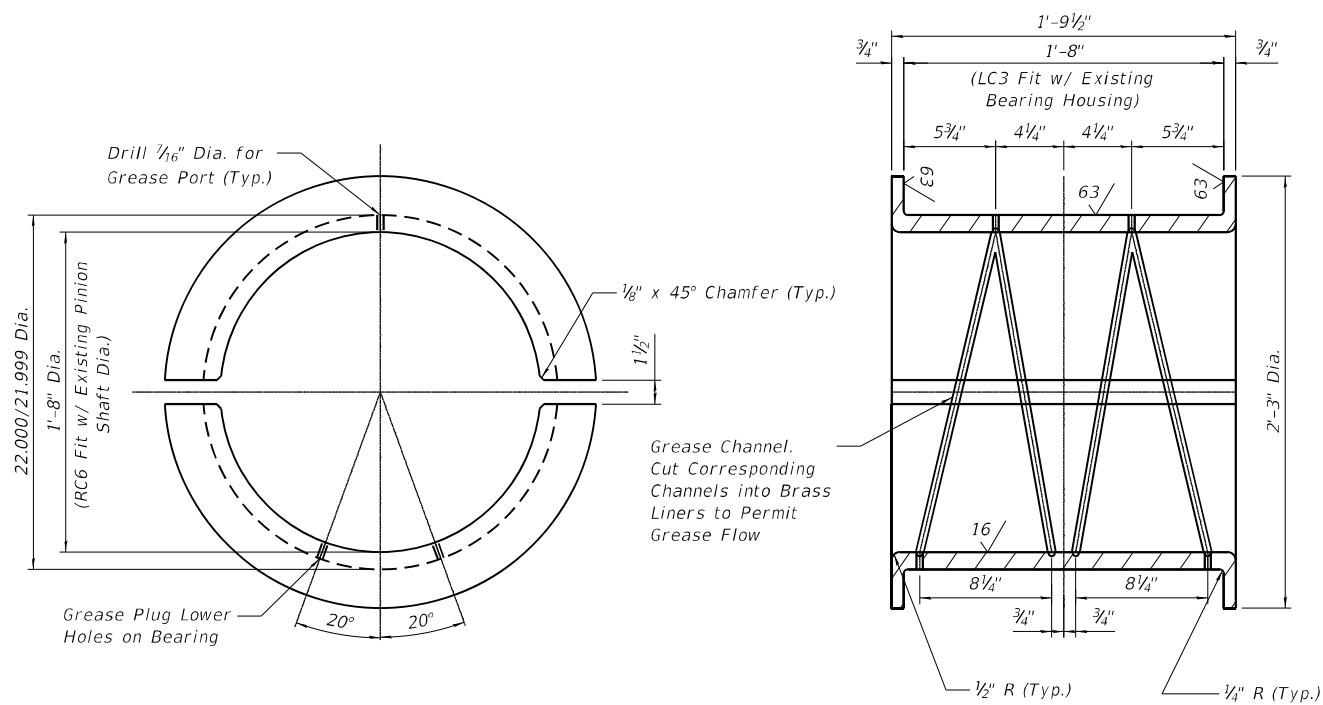
**PINION SHAFT BEARING BUSHING 'B' DETAILS**

Scale 2" = 1'-0"  
 (See Note No. 2)



**GREASE GROOVE DETAIL**

Not To Scale



**PINION SHAFT BEARING BUSHING 'A' DETAILS**

Scale 2" = 1'-0"  
 (See Note No. 2)



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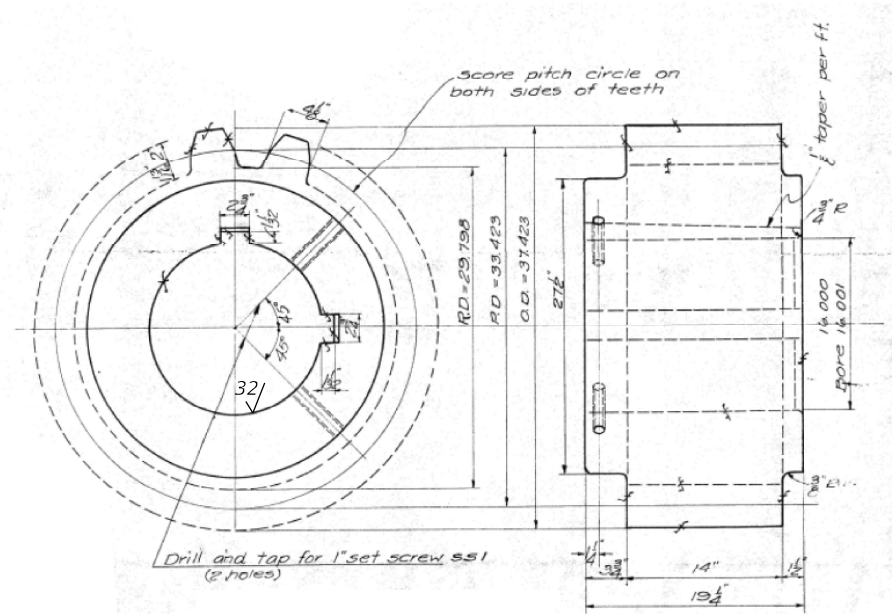
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SPAN DRIVE MACHINERY REPAIR DETAILS 3  
 STRUCTURE NO. 099-9901

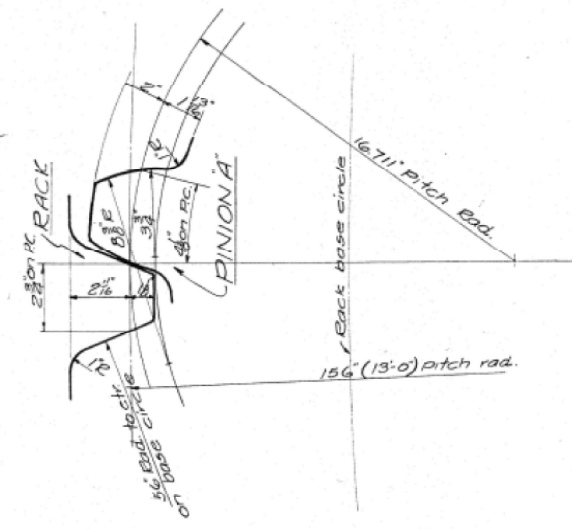
SHEET M-6 OF M-8 SHEETS

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112	2021-074-BR&BP	WILL	16	12
			CONTRACT NO. 62P11	
		ILLINOIS	FED. AID PROJECT	



NOTE:  
All castings to be class B,  
medium grade, annealed,  
A.S.T.M. A27-24 Std. 1930

15 SPECIAL 20° INVOLUTE TEETH T.C.P.  
MAIN PINION "A"  
PATT. NO. 2039-5077-RIGHT & LEFT HAND  
CAST STEEL

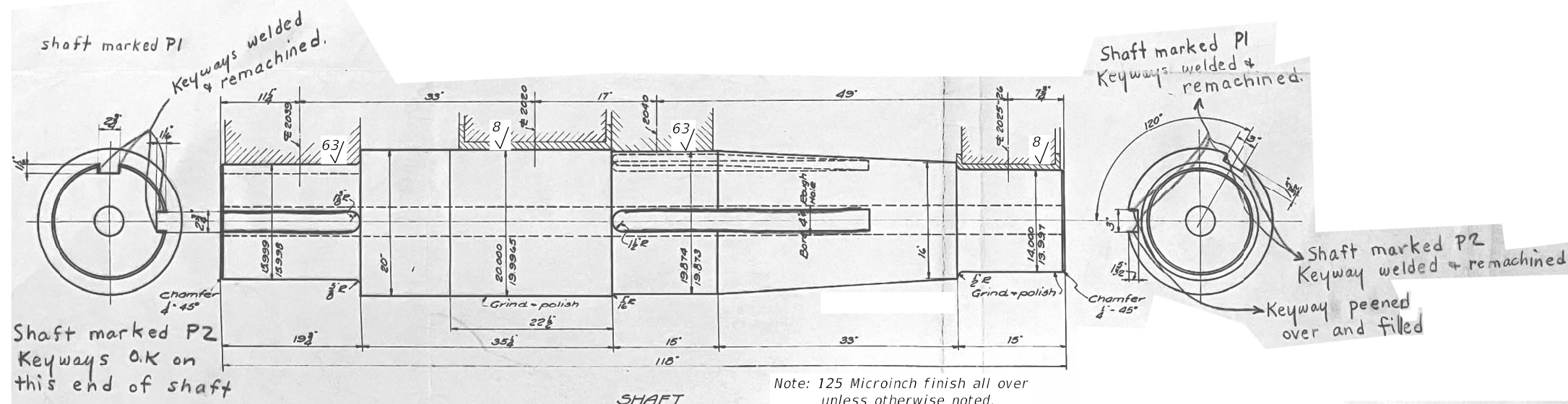


PROFILES OF RACK AND PINION "A" TEETH  
20° INVOLUTE CUT TEETH

**NOTES:**

1. For General Machinery Notes, see Sheet No. M-1.
2. The Contractor shall field verify all dimensions before beginning fabrication and installation.
3. Provide Spare Pinion Shaft, Pinion Gear, and Gear 'b' Assembly prior to the start of construction. The new Spare Pinion Shaft, Pinion Gear, and Gear 'b' shall match the details of the existing unless otherwise noted.
4. Details shown are from the available as-built shop drawings. See the Special Provisions for additional requirements.
5. Utilize an approved non-destructive testing method to measure the existing rack and gear 'c' tooth hardness at each location prior to the start of construction and fabrication of spare components. Report measurements to the Engineer as a part of the pinion gear and gear 'b' shop drawings. The new spare gear 'b' material shall be at least 50 BHN less hard than the minimum measured gear 'c' hardness measured.
6. Provide new gib head tapered keys for the spare pinion and gear 'b' mounted on the spare pinion shaft. New keys shall be forged steel ASTM A668 Class K. Thicknesses shown in the as-built drawings are for the small end. Contractor to field verify all dimensions for new keys. Refer to the Special Provisions for additional information.

PINION DETAILS TAKEN FROM AS-BUILT SHOP DRAWING  
MILWAUKEE BRIDGE COMPANY: "RACK, MAIN PINION "A", GEAR "D", SHEET 5.



SHAFT  
MARK 51  
CARBON STEEL FORGING  
Ship with gear patt. No 2040 in place

Notes in yellow copied from notes on print by R.W. Hunt Co. [see R.W. Hunt letter of 5-24-34]

NOTES:  
Steel forgings for trunnions A.S.T.M., A18-30, Class F, Std. 1930, Annealed.  
Material for shafts ASTM A18-30 Class E, Std. 1930, Annealed.

PINION SHAFT DETAILS TAKEN FROM AS-BUILT SHOP DRAWING  
MILWAUKEE BRIDGE COMPANY: "TRUNNION & SHAFTS", SHEET 13.

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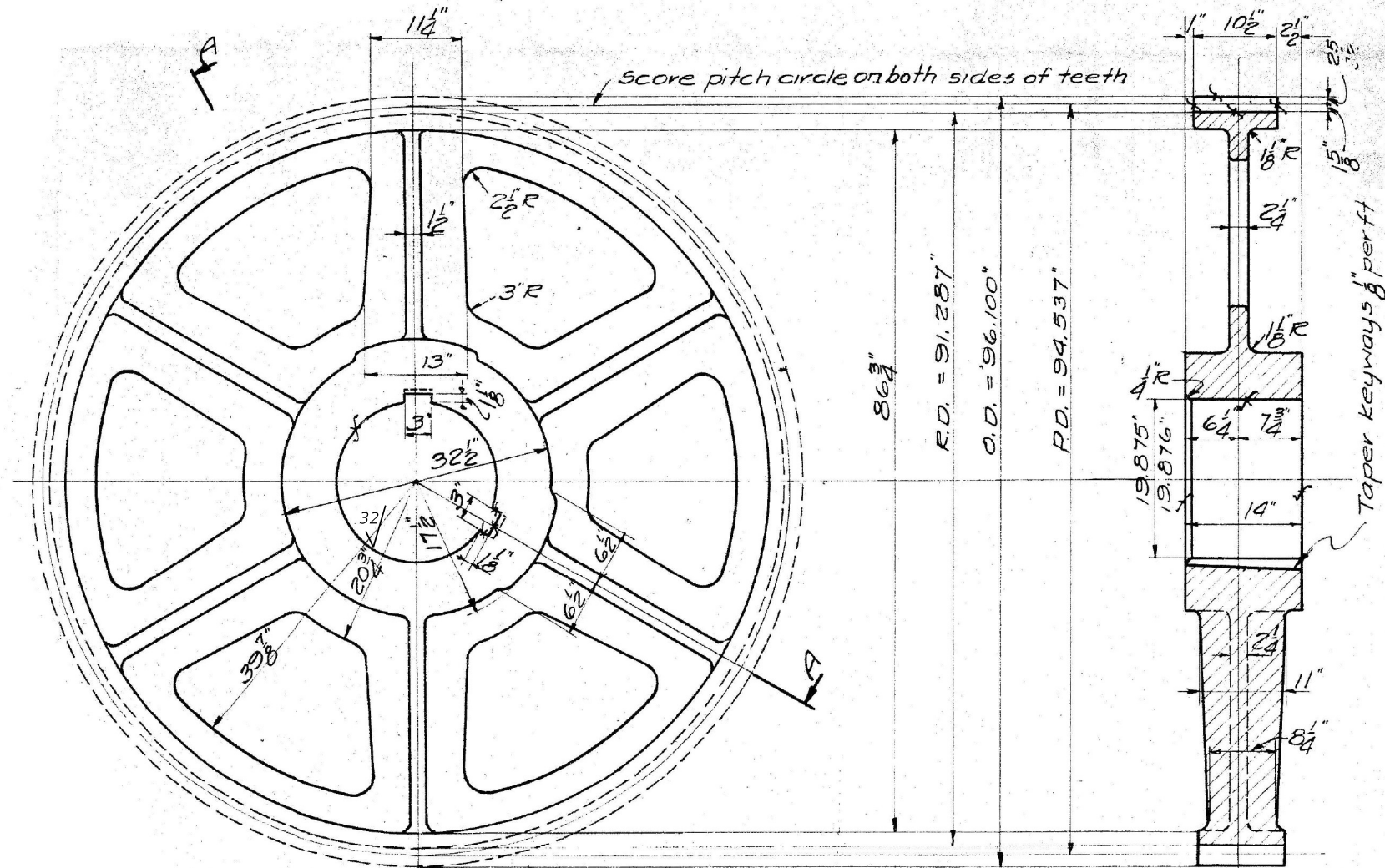
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SPARE PINION AND PINION SHAFT  
STRUCTURE NO. 099-9901  
SHEET M-7 OF M-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

**NOTES:**

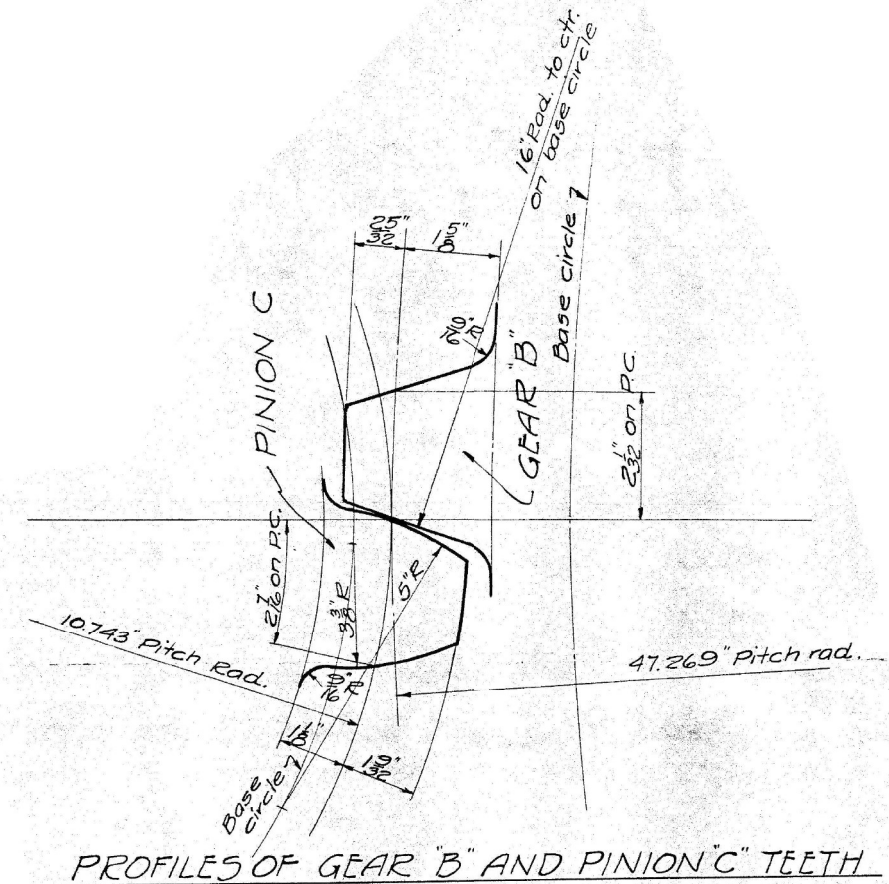
1. For General Machinery Notes, see Sheet No. M-1.
2. For notes regarding spare gear 'b' assembly, see Sheet No. M-7.



66 SPECIAL 20° INVOLUTE CUT TEETH  
 4 1/2" C.P. P.D. = 94.537  
 SECTION A-A

GEAR B  
PATT. NO. 2040-5077  
CAST STEEL

NOTES:  
 Spec. for steel for castings A.S.T.M.  
 A27-24, Std. 1930 class B Med. grade  
 annealed.



PROFILES OF GEAR "B" AND PINION "C" TEETH

GEAR B DETAILS TAKEN FROM AS-BUILT SHOP DRAWING  
 MILWAUKEE BRIDGE COMPANY: MACHINERY BED & GEAR "B", SHEET 9

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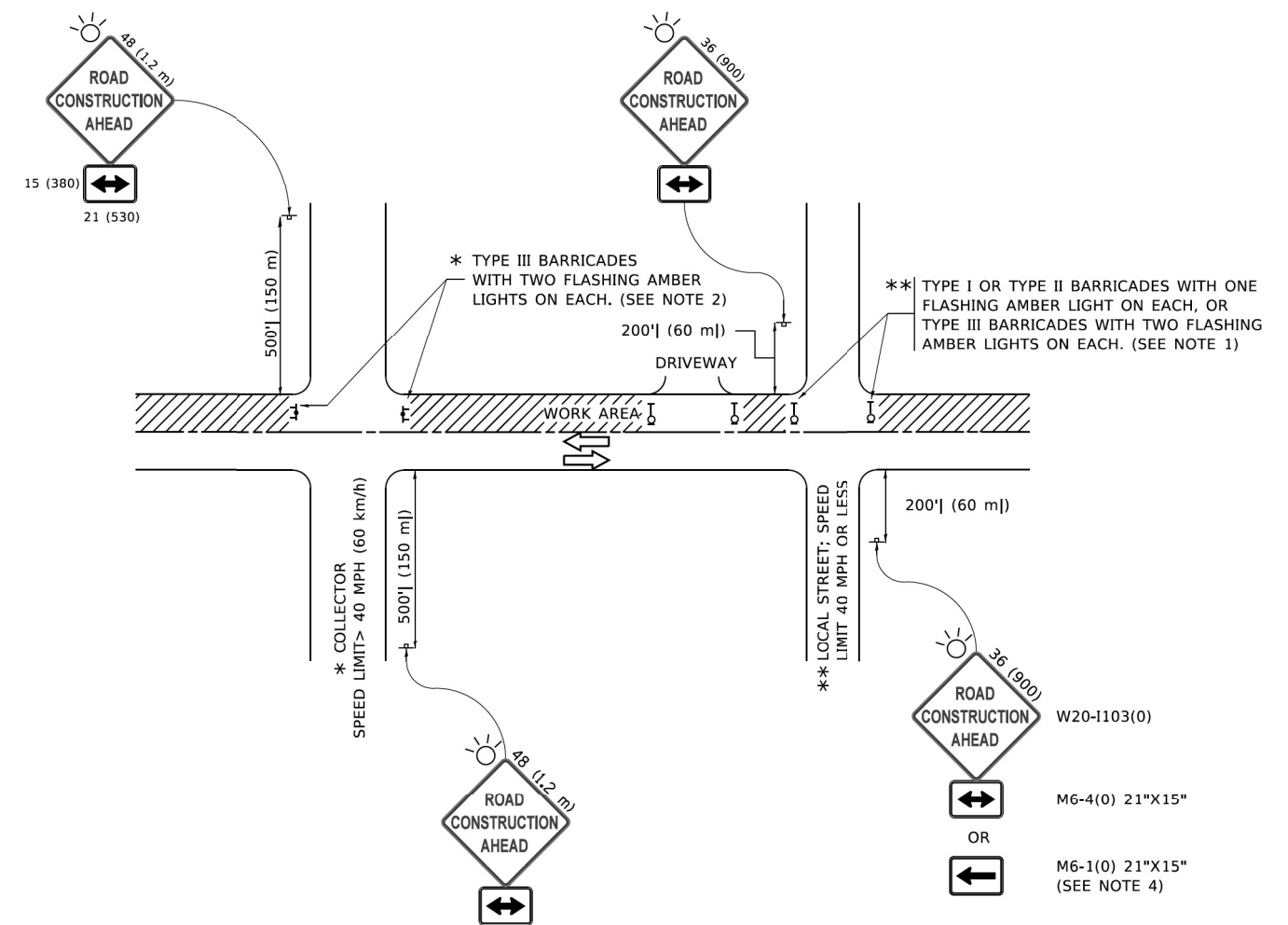
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SPARE GEAR "B"  
 STRUCTURE NO. 099-9901  
 SHEET M-8 OF M-8 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	14
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

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**NOTES:**

- SIDE ROAD WITH A SPEED LIMIT OF 40 MPH (60 km/h) OR LESS AS SHOWN ON THE DRAWING AND AS DIRECTED BY THE ENGINEER:
  - ONE "ROAD CONSTRUCTION AHEAD" SIGN 36 x 36 (900x900) WITH A FLASHER MOUNTED ON IT APPROXIMATELY 200' (60 m) IN ADVANCE OF THE MAIN ROUTE.
  - THE CLOSED PORTION OF THE MAIN ROUTE SHALL BE PROTECTED BY BLOCKING WITH TYPE I, TYPE II OR TYPE III BARRICADES, 1/3 OF THE CROSS SECTION OF THE CLOSED PORTION.
- SIDE ROAD WITH A SPEED LIMIT GREATER THAN 40 MPH (60 km/h) AS SHOWN ON THE DRAWING AND AS DIRECTED BY THE ENGINEER:
  - ONE "ROAD CONSTRUCTION AHEAD" SIGN 48 x 48 (1.2 m x 1.2 m) WITH A FLASHER MOUNTED ON IT APPROXIMATELY 500' (150 m) IN ADVANCE OF THE MAIN ROUTE.
  - THE CLOSED PORTION OF THE MAIN ROUTE SHALL BE PROTECTED BY BLOCKING WITH TYPE III BARRICADES, 1/2 OF THE CROSS SECTION OF THE CLOSED PORTION.
- CONES MAY BE SUBSTITUTED FOR BARRICADES OR DRUMS AT HALF THE SPACING DURING DAY OPERATIONS. CONES SHALL BE A MINIMUM OF 28 (710) IN HEIGHT.
- WHEN THE SIDE ROAD LIES BETWEEN THE BEGINNING OF THE MAINLINE AND THE WORK ZONE, A SINGLE HEADED ARROW (M6-1) SHALL BE USED IN LIEU OF THE DOUBLE HEADED ARROW (M6-4).
- WHEN WORK IS BEING PERFORMED ON A SIDE ROAD OR DRIVEWAY, FOLLOW THE APPLICABLE STANDARD(S). THE DIRECTIONAL ARROW (M6-1 OR M6-4) SHALL BE COVERED OR REMOVED WHEN NO LONGER CONSISTENT WITH THE TRAFFIC CONTROL SET-UP.
- ADVANCE WARNING SIGNS ARE TO BE OMITTED ON DRIVEWAYS UNLESS OTHERWISE SPECIFIED IN THE PLANS OR BY THE ENGINEER.
- THE TRAFFIC CONTROL AND PROTECTION FOR SIDE ROADS, INTERSECTIONS, AND DRIVEWAYS SHALL BE INCLUDED IN THE COST OF SPECIFIED TRAFFIC CONTROL STANDARDS OR ITEMS.

All dimensions are in inches (millimeters) unless otherwise shown.

USER NAME = USMA696622	DESIGNED - L.H.A	REVISED - A. HOUSEH 10-15-96
	DRAWN -	REVISED - T. RAMMACHER 01-06-00
PLOT SCALE = 40,0000 * / in.	CHECKED -	REVISED - A. SCHUETZE 07-01-13
PLOT DATE = 7/19/2023	DATE - 06-89	REVISED - A. SCHUETZE 09-15-16

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TRAFFIC CONTROL AND PROTECTION FOR  
SIDE ROADS, INTERSECTIONS, AND DRIVEWAYS**

SCALE: NONE SHEET 1 OF 1 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	2021-074-BR&BP	WILL	16	15
CONTRACT NO. 62P11				
ILLINOIS FED. AID PROJECT				

