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# STANDARD DETAILS FOR HIGH-STRENGTH BOLT CONNECTIONS OF Q355 STRUCTURAL STEEL (FRICTION-TYPE)

## Q355钢结构高强螺栓连接标准详图 (摩擦型)



中国寰球工程有限公司北京分公司  
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Q355钢结构高强螺栓连接标准详图(摩擦型)  
STANDARD DETAILS FOR HIGH-STRENGTH BOLT  
CONNECTIONS OF Q355 STRUCTURAL STEEL (FRICTION-TYPE)

标准图  
STD. DWG.

HQBJ-SDc-D19-3001-2023

第 1 张 共 49 张  
OF

## DRAWING LIST 图纸目录

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OF

2023	2023-12-30	曹力慧	易宝生	郑建华	
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GENERAL NOTES 总说明

1. CODES AND STANDARDS 标准和规范

(1)	GB 50009-2012	LOAD CODE FOR THE DESIGN OF BUILDING STRUCTURES 建筑结构荷载规范
(2)	GB 50011-2010	CODE FOR SEISMIC DESIGN OF BUILDINGS (2016) 建筑抗震设计规范(2016年版)
(3)	GB 50017-2017	STANDARD FOR DESIGN OF STEEL STRUCTURES 钢结构设计标准
(4)	GB 50205-2020	STANDARD FOR ACCEPTANCE OF CONSTRUCTION QUALITY OF STEEL STRUCTURES 钢结构工程施工质量验收标准
(5)	GB 50661-2011	CODE FOR WELDING OF STEEL STRUCTURES 钢结构焊接规范
(6)	GB 50755-2012	CODE FOR CONSTRUCTION OF STEEL STRUCTURES 钢结构工程施工规范
(7)	GB 55001-2021	GENERAL CODE FOR ENGINEERING STRUCTURES 工程结构通用规范
(8)	GB 55002-2021	GENERAL CODE FOR SEISMIC PRECAUTION OF BUILDINGS AND MUNICIPAL ENGINEERING 建筑与市政工程抗震通用规范
(9)	GB 55006-2021	GENERAL CODE FOR STEEL STRUCTURES 钢结构通用规范
(10)	JGJ 82-2011	TECHNICAL SPECIFICATION FOR HIGH STRENGTH BOLT CONNECTIONS OF STEEL STRUCTURES 钢结构高强度螺栓连接技术规程

2. MATERIAL NOTES 材料说明

2.1 MATERIAL 材料

CATEGORY 类别	MARK OR GRADE 牌号或等级	PROFILE STANDARD 规格标准	MATERIAL STANDARD 材质标准
HOT ROLLED SECTION STEEL (EXCEPT ANGLE) 热轧型钢(角钢除外)	Q355-B,C,D	GB/T 706-2016	GB/T 1591-2018
HOT ROLLED H-SECTION, CUT T SECTION 热轧 H 型钢、T 型钢	Q355-B,C,D	GB/T 11263-2017	GB/T 1591-2018
WELDED H-SECTION STEEL 焊接 H 型钢	Q355-B,C,D	GB/T 33814-2017	GB/T 1591-2018
HOT ROLLED ANGLE 热轧角钢	Q235-B,C,D	GB/T 706-2016	GB/T 700-2006
STEEL TUBE FOR HANDRAIL 栏杆用钢管	Q235-B	GB/T 21835-2008	GB/T 700-2006
STEEL PLATE 钢板	Q355-B,C,D	GB/T 709-2019 GB/T 702-2017	GB/T 1591-2018
STEEL PLATE FOR ANGLE CONNECTION, HANDRAIL& LADDER, LADDER RUNG, RIB PLATE FOR CHECKERED STEEL PLATE 角钢连接的节点板及填板, 栏杆及直爬梯的钢板, 直爬梯踏棍, 花纹钢板加劲板	Q235-B,C,D	GB/T 709-2019 GB/T 702-2017	GB/T 700-2006
HIGH STRENGTH BOLT 高强螺栓	GRADE 10.9 10.9级	GB/T 3632-2008 GB/T 1228~1231-2006	GB/T 3077-2015
ANCHOR BOLT 地脚螺栓	Q355-B,C,D	GB/T 799-2020	GB/T 1591-2018
ORDINARY BOLT 普通螺栓	E.B: GRADE 4.6; 安装螺栓: 4.6级;	GB/T 5780-2016	GB/T 3098.1-2010
	C.S.B: GRADE 5.6; 普通螺栓: 5.6级;	GB/T 5782-2016	
CHECKERED STEEL PLATE (5mm) 花纹钢板 5mm	Q235-A,B	GB/T 33974-2017	GB/T 700-2006
STEEL GRATING 钢格板	Q235-A,B	YB/T 4001.1-2019	GB/T 700-2006
WELDING ROD 焊条	E50/E43		GB/T 5118-2012 GB/T 5117-2012

2.2 WELD QUALITY CLASSIFICATION 焊缝质量等级 (UNLESS OTHERWISE NOTED IN DESIGN DRAWINGS 设计图中注明者除外)

WELDING TYPE 焊接形式	BUTT WELDING 对接焊	PENETRATION GROOVE WELDING 熔透坡口焊	FILLET WELD & OTHERS 角焊缝及其它焊缝
WELD QUALITY CLASSIFICATION 焊缝质量等级	CLASS : 2 二级	CLASS : 2 二级	CLASS : 3 三级

2.3 FOR STEEL PLATES WITH A THICKNESS OF NOT LESS THAN 40mm, ITS CROSS-SECTIONAL SHRINKAGE ALONG THE PLATE THICKNESS DIRECTION SHOULD NOT BE LESS THAN Z15 AS PER THE CURRENT NATIONAL STANDARD "STEEL PLATE WITH THROUGH-THICKNESS PROPERTIES" GB/T 5313 PROVISIONS.

厚度不小于40mm的板件, 其沿板厚方向断面收缩率不小于按现行国家标准《厚度方向性能钢板》GB/T 5313规定的Z15级允许限值。

2.3 CORRESPONDING GUSSET PLATE AND RIB LATE APPLY Q235,WHEN Q235 MEMBER CONNECT TO Q355 MEMBER

当Q235构件连接于Q355构件时, 相应的节点板和加劲板材采用Q235。

2.4 ELECTRODE E43 IS FOR WELDING OF Q235 STEEL, E50 FOR Q355 STEEL. ELECTRODE CORRESPONDING WITH LOWER GRADE STEEL SHALL BE USED WHEN LOWER STEEL WELDED TO HIGHER GRADE STEEL.

Q235 钢材的焊接采用43焊条,Q355钢材的焊接采用50焊条。当低等级的钢材焊接在高等级的钢材上时, 采用低等级钢材对应的焊条。

2.5 REQUIREMENT OF STEEL MATERIAL SEE THE CORRESPONDING PROJECT DESIGN DRAWINGS OR DOCUMENT .

钢材质量等级要求见相关项目的设计图或设计文件。

3. FABRICATION REQUIREMENTS FOR STRUCTURAL STEEL 钢结构制作要求

3.1 ALL MEMBERS SHALL BE SCALED ON 1: 1 ACCORDING TO DESIGN DRAWING, AND PRECISELY MEASURED BEFORE CUTTING AND FABRICATION.

所有构件在制作前必须按图示尺寸以 1: 1 比例放样, 量出准确尺寸后方可下料加工。

3.2 PROPER WELDING PROCEDURE SHOULD BE DECIDED IN ORDER TO ELIMINATE OR MINIMIZE WELDING DEFORMATION AND WELDING STRESS. IF THE DEFORMATION EXCEEDS THE LIMITATION OF CODE, THE MEMBER MUST BE RECTIFIED.

为减少和防止钢结构的焊接变形和焊接应力, 施工时应选择合理的焊接顺序。当变形超过规范的规定时, 必须予以矫正。

3.3 FLANGE OF COMPOSITE MEMBERS (BEAM AND COLUMN) MUST BE GROUND FLAT BY FINE EMERY WHEEL, AND NOT LESS THAN DESIGNED GEOMETRIC SIZE, THE BURR SHOULD BE REMOVED FROM THE END OF OTHER MEMBERS.

组合构件(梁、柱)翼缘板均须用细砂轮磨平, 磨平后的尺寸不得小于设计的几何尺寸。其它杆件的端头应加工消除毛刺。

3.4 THE TOP END OF TRANSVERSE STIFFENER SHOULD BE CONTACTED TIGHTLY WITH FLANGE OF THE BEAM BEFORE WELDING. END CUT FLANGE OF I AND H SHAPE STEEL BEAM SHOULD BE GROUND FLAT TO THE SAME PLANE OF WEB BEFORE ERECTING.

梁的横向加劲肋的上端与翼缘顶紧后焊接, 工字型及 H 型钢梁在端部翼缘切割处, 安装前应磨平至与腹板在一个平面上。

3.5 ALL GUSSET PLATES SHALL BE 8mm THICK UNLESS OTHERWISE NOTED ON DESIGN DRAWING.

除图中注明者外, 所有节点板均采用 8mm 厚。

4. ERECTION REQUIREMENTS FOR STEEL STRUCTURE 钢结构安装要求

4.1 TEMPORARY SUPPORT AND BRACING SHALL BE PROVIDED IN ORDER TO AVOID EXCESSIVE DEFORMATION AND DEFLECTION OF MEMBER DURING TRANSPORTATION AND INSTALLATION, WHEN EXCESSIVE DEFORMATION OCCURS, THE MEMBER SHALL BE RECTIFIED TO MEET THE REQUIREMENT OF CODES BEFORE ERECTION.

构件在运输、吊装时, 应采取必要的临时加固措施, 防止产生过大的弯曲变形。若发现有变形过大的构件, 安装前应予以校正, 合格后方可正式安装。

4.2. WHEN THE MEMBERS HAVE BEEN POSITIONED, THE TIE BEAMS AND BRACING MUST BE INSTALLED IN TIME ACCORDING TO THE DESIGN REQUIREMENT TO ENSURE THE STRUCTURE STABILITY.

结构安装就位后, 应按设计要求及时安装支撑及其他连系构件, 以保证结构的稳定性。

4.3 WHEN THE MEMBERS HAVE BEEN POSITIONED, HIGH STRENGTH BOLTS MUST BE SECURELY TIGHTENED AFTER LEVELING AND PLUMBING EACH LAYER.

当各个构件就位后, 需将各层校正, 再将高强螺栓拧紧。

4.4 FOR WELDED FLANGE AND BOLTED WEB CONNECTIONS, CONSTRUCTION SEQUENCE SHOULD BE: INITIAL TIGHTENING OF WEB BOLTS, FLANGE WELDING, BOLTS FINAL TIGHTENING.

在梁、柱、支撑等构件栓焊混用连接中, 腹板拼接采用高强螺栓时, 施工顺序应在高强螺栓初拧后进行翼缘的焊接, 然后再进行高强螺栓终拧。

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4.5 ALL WELDING SHALL BE FULL ACCORDING TO THE DESIGN REQUIREMENT, UNLESS OTHERWISE NOTED IN THE DRAWING. ALL AROUND WELDING SHALL BE CARRIED CONTINUOUSLY AROUND CORNERS.

除注明外，所有焊接应按设计要求焊满。所有围焊的转角处，必须连续施焊。

4.6 THE CONSTRUCTION AND ACCEPTANCE FOR STEEL STRUCTURE SHALL COMPLY WITH THE REQUIREMENTS OF CURRENT LOCAL AND NATIONAL CODE OF CONSTRUCTION AND ACCEPTANCE.

钢结构施工和验收应严格遵守国家和地方现行有关施工验收规范。

### 5.REQUIREMENTS FOR HIGH STRENGTH BOLT AND CONNECTION 高强螺栓及连接的要求

5.1 TWIST-OFF TYPE HIGH STRENGTH BOLTS SHALL BE USED PRIMARILY IN THIS PROJECT, AND LARGE HEXAGONAL HEAD TYPE CAN BE USED IN CASE OF MEMBER SIZE IS SMALL OR ERECTION SPACE IS INSUFFICIENT.

本工程采用的高强螺栓类型以扭剪型为主，但构件截面尺寸较小和施工困难处可采用大六角头型。

5.2 ALL HIGH STRENGTH BOLTS SHALL BE GRADE 10.9, SLIP COEFFICIENT OF CONTACT SURFACE MUST REACH 0.45.

所有高强螺栓的性能等级为10.9级，摩擦面抗滑移系数必须达到0.45。

5.3 PRETENSION FORCE OF HEAD HIGH STRENGTH BOLT:

高强度螺栓的设计预拉力:

M16: PRETENSION FORCE IS 100kN; M16: 预拉力为 100kN

M20: PRETENSION FORCE IS 155kN; M20: 预拉力为 155kN

M24: PRETENSION FORCE IS 225kN; M24: 预拉力为 225kN

5.4 THE HIGH STRENGTH BOLTS MUST BE INSPECTED BEFORE USE, THE METHOD OF INSPECTION SHALL BE IN ACCORDANCE WITH THE

LATEST REVISION OF CODES AND STANDARDS.

高强度螺栓使用前必须进行检测，其检测方法应依据现行的规范和标准。

5.5 HOLING FOR HIGH STRENGTH BOLTS MUST BE DRILLED IN ONE-OPERATION AND FINISHED AT DRILLER.

高强度螺栓的开孔均采用一次性钻孔，并在钻床上完成。

5.6 THE CONTACT PLATE SURFACE OF HIGH STRENGTH BOLT SHOULD BE FLATTENED WITHOUT SPATTER, BURR OR GREASY DIRT. CONTACT SURFACE SHOULD BE PROTECTED FROM DIRT AND GREASE. IT IS FORBIDDEN TO MARK ON THE CONTACT SURFACE OF HIGH STRENGTH BOLT CONNECTIONS.

加工后的构件，在**高强螺栓连接处**的钢板表面应平整，无焊接飞溅、无毛刺、无油污，**高强螺栓连接处**的摩擦面，应采取保护措施，防止沾染脏物和油污，严禁在**高强螺栓连接处**摩擦面上作任何标记。

5.7 HIGH STRENGTH BOLT IS NOT ALLOWED TO FORCE THROUGH HOLES. HOLES SHOULD BE TRIMMED BY REAMER WHEN BOLT CANNOT PASS THROUGH, MAXIMUM DIAMETER OF FINISHED HOLE SHOULD BE LESS THAN 1.2 TIMES OF BOLT DIAMETER. THE NUMBER OF TRIMMED HOLES SHOULD NOT EXCEED 25% OF THE TOTAL AT THIS NODE. BEFORE REAMING, SURROUNDING BOLTS SHOULD BE FASTENED AND PLIES SHOULD BE TIGHTLY CLAMPED. GAS CUTTING REAMING SHALL NOT BE ALLOWED.

安装**高强螺栓**时，严禁强行穿入螺栓，当不能自由穿入时，该孔应用铰刀进行修整，修整后最大孔径应小于1.2倍螺栓直径，且修孔数量不应超过该节点螺栓数量的25%。修孔前，应将四周螺栓拧紧，使板迭密贴后再进行铰孔，严禁气割扩孔。

5.8 THE CONTACT SURFACE OF HIGH STRENGTH BOLT CONNECTION JOINT SHOULD BE DRY DURING ERECTION, AND WORKING IN RAIN SHALL BE PROHIBITED.

安装**高强螺栓**时，螺栓连接处的摩擦面应保持干燥，严禁雨中作业。

5.9 TORQUE-PRETENSION COEFFICIENT OF LARGE HEXAGONAL HEAD HIGH STRENGTH BOLT SHOULD BE RECHECKED ACCORDING TO THE BATCH OF PRODUCTION BEFORE USE. EIGHT SETS FOR EACH BATCH. TEST RESULT SHOULD MEET THE RELEVANT REQUIREMENTS OF JGJ 82-2011.

大六角头**高强螺栓**施工前，应按出厂批次复验**高强螺栓**连接副的扭矩系数，每批复验8套，检验结果应满足 JGJ 82-2011上的有关要求

5.10 CONNECTION JOINT OF HIGH STRENGTH BOLT SHOULD BE SEALED WITH PUTTY AFTER BEING INSPECTED QUALIFIED, AND PAINTED ACCORDING TO DESIGN REQUIREMENTS.

检验合格后，**高强螺栓**连接处的板缝应及时用腻子封闭，并按设计要求涂漆。

5.11 HIGH STRENGTH BOLT ASSEMBLIES SHOULD BE DELIVERED TO THE SITE IN BATCHES AND BE USED IN THE SAME BATCH AS ASSEMBLIES.

**高强螺栓**连接副应按批配套进场并在同批内配套使用。

5.12 DURING INSTALLATION, HIGH STRENGTH BOLT ASSEMBLIES WITH THREAD DAMAGE AND DIRT SHALL NOT BE USED, AND HIGH-STRENGTH BOLTS SHALL NOT BE USED AS TEMPORARY BOLTS.

在安装过程中，不得使用螺纹损伤及沾染脏物的高强度螺栓连接副，不得用**高强螺栓**兼作临时螺栓。

### 6. SPECIFIED REQUIREMENTS OF MATERIAL STEEL FOR SEISMIC RESISTANCE 抗震结构钢材特别要求

6.1 THE RATIO OF ACTUAL YIELD STRENGTH TO ACTUAL ULTIMATE TENSILE STRENGTH FOR MATERIAL STEEL SHALL NOT BE GREATER THAN 0.85.

钢材的屈服强度实测值与抗拉强度实测值的比值不应大于0.85。

6.2 THE MATERIAL STEEL SHALL HAVE OBVIOUS YIELD PLATEAU, AND THE ELONGATION RATE SHALL BE GREATER THAN 20%.

钢材应有明显的屈服台阶，且伸长率应大于20%。

6.3 THE MATERIAL STEEL SHALL HAVE GOOD WELDABILITY AND QUALIFIED NOTCH TOUGHNESS.

钢材应有良好的可焊性和合格的冲击韧性。

### 7. REQUIREMENTS FOR DETAILING OF STRUCTURAL STEEL 钢结构构造要求

7.1 UNLESS OTHERWISE NOTED, THE CORNER CLIP OF GUSSET PLATE FOR H-SECTION & WH-SECTION SHALL BE AS BELOW.

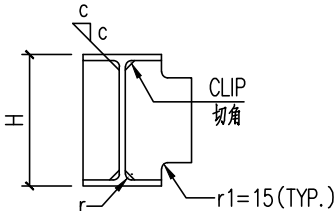
除图中注明者外，H型钢及 WH焊接型钢连接板切角将按如下尺寸。

CORNER CLIP TABLE FOR H-SECTION H型钢切角表

r	r≤10	10<r≤15	15<r≤20	20<r≤25
c	10	15	20	25

CORNER CLIP TABLE FOR WH-SECTION WH焊接型钢切角表

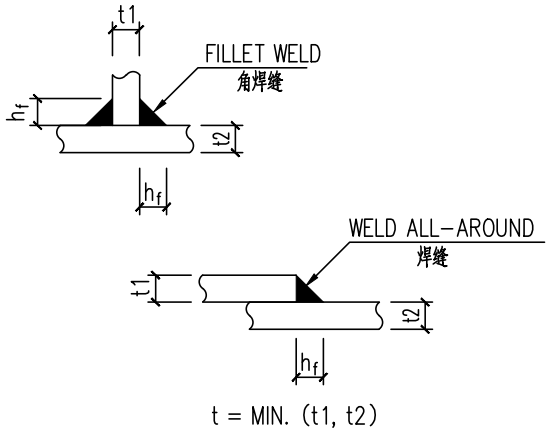
H	600≤H<900	900≤H≤1200
c	15	20



7.2 UNLESS OTHERWISE SPECIFIED, THE WELDS SHALL BE FULL WELDS AND WELD SIZE SEE FOLLOWING TABLE.

除注明者外，焊缝均采用满焊，未注明的焊缝尺寸见下表。

PLATE THICKNESS 板厚度 (t)	WELD SIZE (h <sub>f</sub> ) 焊缝	
	T JOINTS T 连接	LAP JOINTS 搭接
t ≤ 6	t	t
6 < t ≤ 8	6	6
8 < t ≤ 10	8	8
10 < t ≤ 14	10	10
14 < t ≤ 20	12	12
t > 20	16	16



### 8 OTHER NOTES 其它说明

8.1 ALL DIMENSIONS ARE SHOWN IN MILLIMETERS UNLESS OTHERWISE NOTED.

除注明者外，所有的尺寸均以毫米为单位。

8.2 DESIGN WORKING LIFE IS 50 YEARS.

设计工作年限为50年。

8.3 DURING THE USE OF STANDARD DETAIL FOR HIGH-STRENGTH BOLT CONNECTIONS OF STRUCTURAL STEEL, THE DETAILS OF EACH NODE SHOULD BE VERIFIED BY THE DESIGNER TO ENSURE THE SAFETY OF THE CONNECTION NODE.

**钢结构高强螺栓**连接标准详图在使用过程中，各节点详图应由设计人计算核定，确保连接节点的安全。

8.4 REQUIREMENT OF PAINTING, FIREPROOFING AND RUST REMOVAL SEE ” GENERAL SPECIFICATION FOR CONSTRUCTION OF CIVIL & STRUCTURAL WORKS” OF EACH PROJECT.

防腐涂漆、防火和除锈要求见项目结构工程施工总说明。

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9. WELDING SYMBOLS 焊缝符号

No. 序号	NAME 焊缝名称	TYPE OF WELD SEAM 焊缝形式	SYMBOL 标注图示
(1)	BUTT WELDING 对接焊缝		 对接焊缝 BUTT WELDING 磨平 GROUND SMOOTH
(2)	SINGLE-SIDED FILLET WELDING (CORNER JOINT) 单面角焊缝 (转角处)		
(3)	DOUBLE-SIDED FILLET WELDING (CORNER JOINT) 双面角焊缝 (转角处)		
(4)	SINGLE-SIDED FILLET WELDING 单面角焊缝		
(5)	DOUBLE-SIDED FILLET WELDING 双面角焊缝		
(6)	PLUG WELDING 塞焊缝		
(7)	SPOT WELDING 点焊缝		
(8)	GROOVE WELDING 单面V型坡口焊		 带垫板 BACKING BAR 磨平 GROUND FLUSH 不磨平 COMMON
(9)	SAME WELDING 相同焊缝		
(10)	WELD ALL AROUND 围焊		
(11)	WELD AROUND 3 SIDES 三面围焊		
(12)	SITE WELDING 现场焊缝		
(13)	INTERMITTENT FILLET WELDING 断续角焊缝		
(14)	STAGGERED INTERMITTENT FILLET WELDING 交错断续角焊缝		

10. BOLTS SYMBOLS 螺栓符号

BOLTS 螺栓	BOLTS SYMBOL 螺栓符号
COMMON STRENGTH BOLT 普通螺栓	
HIGH STRENGTH BOLT 高强螺栓	
ERECTION BOLT 安装螺栓	

11. DIAMETER FOR BOLT HOLES 螺栓孔直径

BOLT DIA. 螺栓直径	DIAMETER OF HOLES 螺栓孔直径	
	C. S. B 普通螺栓	H. S. B 高强螺栓
M10	11	
M12	13	13.5
M14	15	
M16	17	17.5
M18	19.5	
M20	21.5	22
M22	23.5	24
M24	25.5	26

12. ABBREVIATIONS 缩写

A.B	ANCHOR BOLT	地脚螺栓
B	SECONDARY BEAM	次梁
B.B	BACKING BAR	衬垫
B.O.B	BOTTOM OF BASE PLATE	柱脚底板底
B.O.S	BOTTOM OF STEEL	钢构件底
B.PL	BASE PLATE	柱脚底板
C	COLUMN	柱
C.L	CENTER LINE	中心线
C.O.S	CENTER OF STEEL	构件中心
CONC.	CONCRETE	混凝土
C.S.B	COMMON STRENGTH BOLT	普通螺栓
E.B	ERECTION BOLT	安装螺栓
EL	ELEVATION	标高
EXP JT	EXPANSION JOINT	伸缩缝节点
EXP L	EXPANSION LINE	伸缩缝
F.S	FIXED SADDLE	固定支座
G	GIRDER	铰接主梁
G.L	GROUND LEVEL	地面标高
G.PL	GUSSET PLATE	连接板
H	HORIZONTAL BRACING	单肢水平撑
2H	DOUBLE HORIZONTAL BRACING	双肢水平撑

HM	HOT-ROLLED HM-SHAPED STEEL	热轧中翼缘 H型钢
HN	HOT-ROLLED HN-SHAPED STEEL	热轧窄翼缘 H型钢
HW	HOT-ROLLED HW-SHAPED STEEL	热轧宽翼缘 H型钢
H.S.B	HIGH STRENGTH BOLT	高强螺栓
J	JOIST	小梁
LD	LADDER	爬梯
MAX.	MAXIMUM	最大
MIN.	MINIMUM	最小
MON	MONORAIL	单轨吊
P	POST	立柱
PL	PLATE	钢板
R.C	REINFORCED CONCRETE	钢筋混凝土
RG	RIGID GIRDER	刚接主梁
R.PL	RIB PLATE	加劲板
S.PL	SPLICE PLATE	拼接板
S.R.K	SHEAR-RESISTANT KEY	剪力键
S.S	SLIDING SADDLE	滑动支座
ST	STAIRWAY	楼梯
STL.	STOOL	锚栓托座
THK.	THICKNESS	厚度
T.O.B	TOP OF BEAM	钢梁顶面
T.O.C	TOP OF CONCRETE	混凝土顶面
T.O.F	TOP OF FINISHED FLOOR LEVEL	完成面标高
T.O.G	TOP OF GRATING	钢格板顶面
T.O.S	TOP OF STEEL	钢结构顶面
TYP.	TYPICAL	典型的
V	VERTICAL BRACING	单肢垂直撑
2V	DOUBLE VERTICAL BRACING	双肢垂直撑
WH	WELDED H-SECTION STEEL	焊接 H型钢

13. LEGEND 图例

	C.PL	CHECKERED STEEL PLATE	花纹钢板
	DK	CORRUGATED STEEL DECK	压型钢板
	F.P	FIREPROOFING	防火
	GT	GRATING	钢格板
	H.R	HANDRAIL	栏杆
	W.P	WORK POINT	工作点
		DIRECTION OF GRATING BEARING BAR	钢格板受力方向

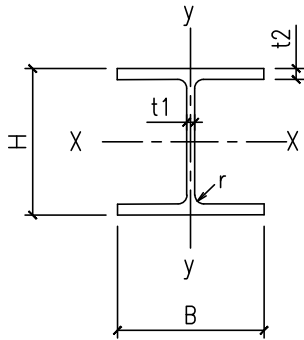
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版次	日期	设计	校核	审核	
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HOT ROLLED H-SECTION 热轧 H 型钢 (GB/T 11263-2017)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)					AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> )		RADIUS OF GYRATION 惯性半径 (cm)		SECTION MODULUS 截面模量 (cm <sup>3</sup> )	
		H	B	t1	t2	r			Ix	Iy	ix	iy	Wx	Wy
501	HW100x100x6x8	100	100	6	8	8	21.58	16.9	378	134	4.18	2.48	75.6	26.7
502	HW125x125x6.5x9	125	125	6.5	9	8	30.00	23.6	839	293	5.28	3.12	134	46.9
503	HW150x150x7x10	150	150	7	10	8	39.64	31.1	1620	563	6.39	3.76	216	75.1
504	HW175x175x7.5x11	175	175	7.5	11	13	51.42	40.4	2900	984	7.50	4.37	331	112
505	HW200x200x8x12	200	200	8	12	13	63.53	49.9	4720	1600	8.61	5.02	472	160
506	HW250x250x9x14	250	250	9	14	13	91.43	71.8	10700	3650	10.80	6.31	860	292
507	HW300x300x10x15	300	300	10	15	13	118.5	93.0	20200	6750	13.10	7.55	1350	450
508	HW350x350x12x19	350	350	12	19	13	171.9	135	39800	13600	15.20	8.88	2280	776
509	HW400x400x13x21	400	400	13	21	22	218.7	172	66600	22400	17.50	10.10	3330	1120
511	HM148x100x6x9	148	100	6	9	8	26.34	20.7	1000	150	6.16	2.38	135	30.1
512	HM194x150x6x9	194	150	6	9	8	38.10	29.9	2630	507	8.30	3.64	271	67.6
513	HM244x175x7x11	244	175	7	11	13	55.49	43.6	6040	984	10.4	4.21	495	112
514	HM294x200x8x12	294	200	8	12	13	71.05	55.8	11100	1600	12.5	4.74	756	160
515	HM340x250x9x14	340	250	9	14	13	99.53	78.1	21200	3650	14.6	6.05	1250	292
516	HM390x300x10x16	390	300	10	16	13	133.3	105	37900	7200	16.9	7.35	1940	480
517	HM440x300x11x18	440	300	11	18	13	153.9	121	54700	8110	18.9	7.25	2490	540
518	HM488x300x11x18	488	300	11	18	13	159.2	125	68900	8110	20.8	7.13	2820	540
519	HM588x300x12x20	588	300	12	20	13	187.2	147	114000	9010	24.7	6.93	3890	601
522	HN150x75x5x7	150	75	5	7	8	17.84	14.0	666	49.5	6.10	1.66	88.8	13.2
523	HN200x100x5.5x8	200	100	5.5	8	8	26.66	20.9	1810	134	8.22	2.23	181	26.7
524	HN250x125x6x9	250	125	6	9	8	36.96	29.0	3960	294	10.4	2.81	317	47.0
525	HN300x150x6.5x9	300	150	6.5	9	13	46.78	36.7	7210	508	12.4	3.29	481	67.7
526	HN350x175x7x11	350	175	7	11	13	62.91	49.4	13500	984	14.6	3.95	771	112
527	HN400x200x8x13	400	200	8	13	13	83.37	65.4	23500	1740	16.8	4.56	1170	174
528	HN450x200x9x14	450	200	9	14	13	95.43	74.9	32900	1870	18.6	4.42	1460	187
529	HN500x200x10x16	500	200	10	16	13	112.3	88.1	46800	2140	20.4	4.36	1870	214
530	HN600x200x11x17	600	200	11	17	13	131.7	103	75600	2270	24.0	4.15	2520	227
531	HN700x300x13x24	700	300	13	24	18	231.5	182	197000	10800	29.2	6.83	5640	721
532	HN800x300x14x26	800	300	14	26	18	263.5	207	286000	11700	33.0	6.66	7160	781
533	HN900x300x16x28	900	300	16	28	18	305.8	240	404000	12600	36.4	6.42	8990	842





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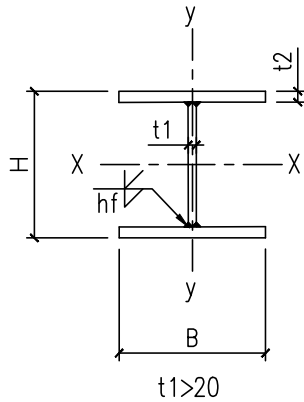
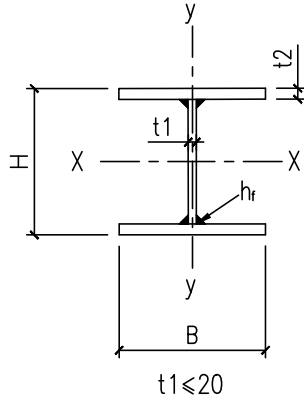
型钢特性表及库号(1/4)  
SHAPE PROPERTIES LIST & BANK CODE (1/4)

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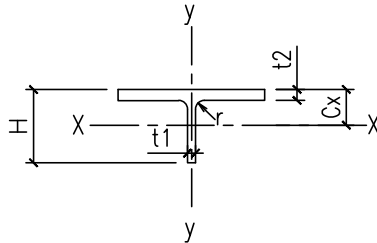
WELDED STEEL H-SECTION 焊接 H 型钢 (REFER TO GB/T 33814-2017)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)					AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> )		RADIUS OF GYRATION 惯性半径 (cm)		SECTION MODULUS 截面模量 (cm <sup>3</sup> )	
		H	B	t1	t2	h <sub>r</sub>			I <sub>x</sub>	I <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>	W <sub>x</sub>	W <sub>y</sub>
536	WH600x300x10x20	600	300	10	20	7	176	138.2	115595	9005	25.63	7.15	3853	600
537	WH600x400x10x25	600	400	10	25	8	255	200.2	179281	26671	26.53	10.23	5976	1334
538	WH700x400x12x25	700	400	12	25	8	278	218.2	255379	26676	30.31	9.80	7297	1334
539	WH800x350x14x25	800	350	14	25	8	280	219.8	312083	17882	33.38	7.99	7802	1022
540	WH800x400x14x25	800	400	14	25	8	305	239.4	349635	26684	33.85	9.35	8741	1334
541	WH900x400x14x25	900	400	14	25	8	319	250.4	454565	26686	37.74	9.14	10101	1334
542	WH900x450x14x30	900	450	14	30	9	388	304.3	580259	45582	38.69	10.84	12895	2026
543	WH1000x400x16x30	1000	400	16	30	10	390	306.5	675465	32032	41.59	9.05	13509	1602
544	WH1000x500x16x30	1000	500	16	30	10	450	353.6	816645	62532	42.58	11.78	16333	2501
545	WH1100x400x20x36	1100	400	20	36	12	494	387.5	996482	38469	44.93	8.83	18118	1923
546	WH1100x500x20x36	1100	500	20	36	12	566	444.0	1200338	75069	46.06	11.52	21824	3003
547	WH1200x500x20x36	1200	500	20	36	12	586	459.7	1459003	75075	49.91	11.32	24317	3003
548	WH1200x600x20x36	1200	600	20	36	12	658	516.2	1702962	129675	50.88	14.04	28383	4323
550	WH500x400x14x25	500	400	14	25	8	263	206.5	123548	26677	21.67	10.07	4914	1334
551	WH600x400x18x25	600	400	18	25	10	299	234.7	190373	26693	25.23	9.44	6346	1335
552	WH700x400x18x25	700	400	18	25	10	317	248.8	269110	26698	29.13	9.17	7689	1335
553	WH800x400x20x30	800	400	20	30	12	388	304.6	423457	32049	33.03	9.08	10586	1602
554	WH900x450x20x36	900	450	20	36	12	438	384.3	699622	54730	37.80	10.57	15547	2432
555	WH1000x500x22x40	1000	500	22	40	12	602	472.9	1064893	83415	42.04	11.76	21298	3337



HOT-ROLLED CUT T-SECTION 热轧剖分 T 型钢 (GB/T 11263-2017)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)					AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> )		RADIUS OF GYRATION 惯性半径 (cm)		SECTION MODULUS 截面模量 (cm <sup>3</sup> )		CENTER OF GRAVITY 重心 (cm) C <sub>x</sub>
		H	B	t1	t2	r			I <sub>x</sub>	I <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>	W <sub>x</sub>	W <sub>y</sub>	
631	TN75x75	75	75	5	7	8	8.92	7.0	42.6	24.7	2.18	1.66	7.46	6.59	1.79
632	TN100x100	100	100	5.5	8	8	13.33	10.5	114	66.9	2.92	2.23	14.8	13.4	2.31
633	TN125x125	125	125	6	9	8	18.48	14.5	248	147	3.66	2.81	25.6	23.5	2.81
634	TN150x150	150	150	6.5	9	13	23.39	18.4	464	254	4.45	3.29	40.0	33.8	3.41
635	TN175x175	175	175	7	11	13	31.45	24.7	814	492	5.08	3.95	59.3	56.2	3.76
636	TN200x200	200	200	8	13	13	41.68	32.7	1390	868	5.78	4.56	88.6	86.8	4.26





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型钢特性表及库号(2/4)  
SHAPE PROPERTIES LIST & BANK CODE (2/4)



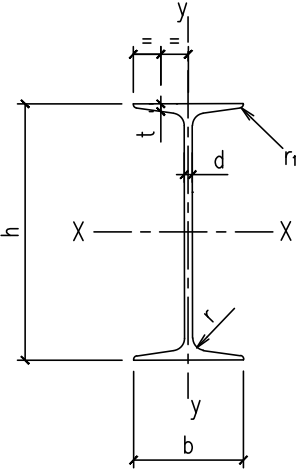
2023	版次 REV	2023-12-30	日期 DATE	曹力慧 设计 DESIGN	审核 DISC APP.
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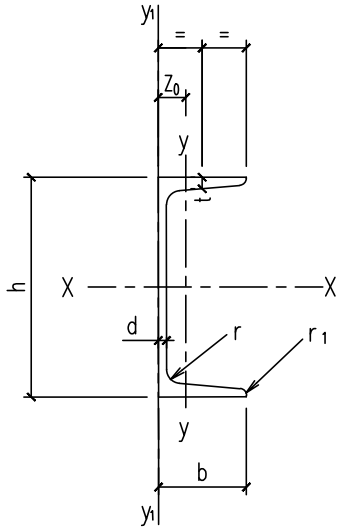
HOT ROLLED I-SECTION 热轧工字钢 (GB/T 706-2016)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)						AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> )		RADIUS OF GYRATION 惯性半径 (cm)		SECTION MODULUS 截面模量 (cm <sup>3</sup> )	
		h	b	d	t	r	r <sub>1</sub>			I <sub>x</sub>	I <sub>y</sub>	i <sub>x</sub>	i <sub>y</sub>	W <sub>x</sub>	W <sub>y</sub>
556	I10	100	68	4.5	7.6	6.5	3.3	14.33	11.3	245	33.0	4.14	1.52	49.0	9.72
557	I12.6	126	74	5.0	8.4	7.0	3.5	18.10	14.2	488	46.9	5.20	1.61	77.5	12.7
558	I14	140	80	5.5	9.1	7.5	3.8	21.50	16.9	712	64.4	5.76	1.73	102	16.1
559	I16	160	88	6.0	9.9	8.0	4.0	26.11	20.5	1130	93.1	6.58	1.89	141	21.2
560	I18	180	94	6.5	10.7	8.5	4.3	30.74	24.1	1660	122	7.36	2.00	185	26.0
561	I20a	200	100	7.0	11.4	9.0	4.5	35.55	27.9	2370	158	8.15	2.12	237	31.5
562	I22a	220	110	7.5	12.3	9.5	4.8	42.10	33.1	3400	225	8.99	2.31	309	40.9
563	I25a	250	116	8.0	13	10.0	5.0	48.51	38.1	5020	280	10.2	2.40	402	48.3
564	I28a	280	122	8.5	13.7	10.5	5.3	55.37	43.5	7110	345	11.3	2.50	508	56.6
565	I32a	320	130	9.5	15.0	11.5	5.8	67.12	52.7	11100	460	12.8	2.62	692	70.8
566	I36a	360	136	10.0	15.8	12.0	6.0	76.44	60.0	15800	552	14.4	2.69	875	81.2
567	I40a	400	142	10.5	16.5	12.5	6.3	86.07	67.6	21700	660	15.9	2.77	1090	93.2
568	I45a	450	150	11.5	18.0	13.5	6.8	102.4	80.4	32200	855	17.7	2.89	1430	114



HOT ROLLED CHANNEL STEEL 热轧槽型钢 (GB/T 706-2016)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)						AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	Z <sub>0</sub> (cm)	MOMENT OF INERTIA 截面模量 (cm <sup>4</sup> )			RADIUS OF GYRATION 惯性半径 (cm)		SECTION MODULUS 截面模量 (cm <sup>3</sup> )	
		h	b	d	t	r	r <sub>1</sub>				I <sub>x</sub>	I <sub>y</sub>	I <sub>y1</sub>	i <sub>x</sub>	i <sub>y</sub>	W <sub>x</sub>	W <sub>y</sub>
571	[8	80	43	5.0	8.0	8.0	4.0	10.24	8.04	1.43	101	16.6	37.4	3.15	1.27	25.3	5.79
572	[10	100	48	5.3	8.5	8.5	4.2	12.74	10.0	1.52	198	25.6	54.9	3.95	1.41	39.7	7.80
573	[12.6	126	53	5.5	9.0	9.0	4.5	15.69	12.3	1.59	391	38.0	77.1	4.95	1.57	62.1	10.2
574	[14a	140	58	6.0	9.5	9.5	4.8	18.51	14.5	1.71	564	53.2	107	5.52	1.70	80.5	13.0
575	[16a	160	63	6.5	10.0	10.0	5.0	21.95	17.2	1.80	866	73.3	144	6.28	1.83	108	16.3
576	[18a	180	68	7.0	10.5	10.5	5.2	25.69	20.2	1.88	1270	98.6	190	7.04	1.96	141	20.0
577	[20a	200	73	7.0	11.0	11.0	5.5	28.83	22.6	2.01	1780	128	244	7.86	2.11	178	24.2
578	[22a	220	77	7.0	11.5	11.5	5.8	31.83	25.0	2.10	2390	158	298	8.67	2.23	218	28.2
579	[25a	250	78	7.0	12.0	12.0	6.0	34.91	27.4	2.07	3370	176	322	9.82	2.24	270	30.6
580	[28a	280	82	7.5	12.5	12.5	6.2	40.02	31.4	2.10	4760	218	388	10.9	2.33	340	35.7
581	[32a	320	88	8.0	14.0	14.0	7.0	48.50	38.1	2.24	7600	305	552	12.5	2.50	475	46.5
582	[36a	360	96	9.0	16.0	16.0	8.0	60.89	47.8	2.44	11900	455	818	14.0	2.73	660	63.5



 <b>中国寰球工程有限公司北京分公司</b> CHINA HUANQU CONTRACTING & ENGINEERING (BEIJING) CO., LTD.				型钢特性表及库号(3/4) SHAPE PROPERTIES LIST & BANK CODE (3/4)			
工程设计综合资质甲级 COMPREHENSIVE DESIGN LICENSE		证书编号 CERTIFICATE NO. A1101011		标准图 STD. DWG.		HQBJ-SDc-D19-3001-2023	
				第 8 张		共 49 张	

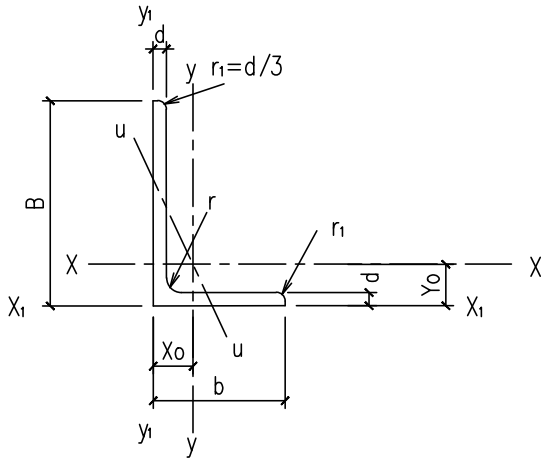
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2023	2023-12-30	曹力慧	易生	郑建华	审核
版次	日期	设计	校核		DISC APP.
REV	DATE	DESIGN	CKD		

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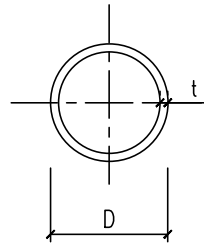
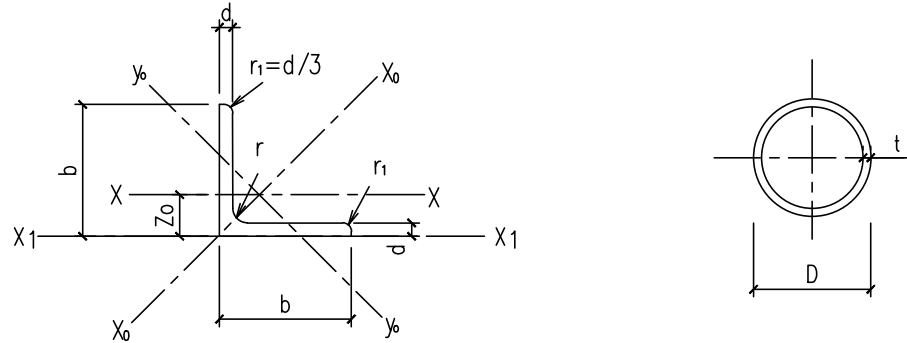
Q235 HOT ROLLED UNEQUAL ANGLE Q235 热轧不等边角钢 (GB/T 706-2016)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)				AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	X <sub>0</sub> (cm)	Y <sub>0</sub> (cm)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> )					RADIUS OF GYRATION 惯性半径 (cm)			SECTION MODULUS 截面模量 (cm <sup>3</sup> )		
		B	b	d	r					I <sub>x</sub>	I <sub>x1</sub>	I <sub>y</sub>	I <sub>y1</sub>	I <sub>u</sub>	i <sub>x</sub>	i <sub>y</sub>	i <sub>u</sub>	W <sub>x</sub>	W <sub>y</sub>	W <sub>u</sub>
111	L50x32x4	50	32	4	5.5	3.177	2.49	0.77	1.65	8.02	16.7	2.58	4.45	1.53	1.59	0.90	0.69	2.39	1.06	0.87
112	L56x36x5	56	36	5	6	4.415	3.47	0.88	1.87	13.9	29.3	4.49	7.94	2.67	1.77	1.01	0.78	3.71	1.65	1.36
113	L63x40x6	63	40	6	7	5.908	4.64	0.99	2.12	23.4	50.0	7.29	13.1	4.34	1.96	1.11	0.86	5.59	2.43	1.99
114	L70x45x6	70	45	6	7.5	6.644	5.22	1.09	2.32	32.5	68.4	10.6	18.6	6.35	2.21	1.26	0.98	6.95	3.12	2.59
115	L75x50x8	75	50	8	8	9.467	7.43	1.29	2.52	52.4	113	18.5	34.2	10.9	2.35	1.40	1.07	10.5	4.99	4.10
116	L80x50x8	80	50	8	8	9.867	7.75	1.25	2.73	62.8	136	18.9	34.3	11.4	2.52	1.38	1.07	11.9	5.03	4.16
117	L90x56x8	90	56	8	9	11.18	8.78	1.36	3.04	91.0	194	27.2	47.9	16.3	2.85	1.56	1.21	15.3	6.41	5.29
118	L100x63x10	100	63	10	10	15.47	12.1	1.58	3.40	154	333	47.1	85.7	28.3	3.15	1.74	1.35	23.3	9.98	8.24
119	L125x80x10	125	80	10	11	19.71	15.5	1.92	4.14	312	650	101	173	59.5	3.98	2.26	1.74	37.3	16.6	13.6
120	L140x90x10	140	90	10	12	22.26	17.5	2.12	4.58	446	913	140	246	85.8	4.47	2.56	1.96	47.3	21.2	17.5
121	L160x100x10	160	100	10	13	25.32	19.9	2.28	5.24	669	1360	205	337	122	5.14	2.85	2.19	62.1	26.6	21.9
122	L200x125x12	200	125	12	14	37.91	29.8	2.83	6.54	1570	3190	483	788	286	6.44	3.57	2.74	117	50.0	41.2
123	L200x125x16	200	125	16	14	49.74	39.0	2.99	6.70	2020	4260	615	1060	366	6.38	3.52	2.71	152	64.9	53.3



Q235 HOT ROLLED EQUAL ANGLE Q235 热轧等边角钢 (GB/T 706-2016)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)			AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	Z <sub>0</sub> (cm)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> )				RADIUS OF GYRATION 惯性半径 (cm)			SECTION MODULUS 截面模量 (cm <sup>3</sup> )		
		b	d	r				I <sub>x</sub>	I <sub>x1</sub>	I <sub>x0</sub>	I <sub>y0</sub>	i <sub>x</sub>	i <sub>x0</sub>	i <sub>y0</sub>	W <sub>x</sub>	W <sub>x0</sub>	W <sub>y0</sub>
91	L40x5	40	5	5	3.792	2.98	1.17	5.53	10.7	8.76	2.30	1.21	1.52	0.78	1.96	3.10	1.39
92	L45x6	45	6	5	5.077	3.99	1.33	9.33	18.4	14.8	3.89	1.36	1.70	0.8	2.95	4.64	2.06
93	L50x6	50	6	5.5	5.688	4.46	1.46	13.1	25.1	20.7	5.42	1.52	1.91	0.98	3.68	5.85	2.63
94	L56x5	56	5	6	5.415	4.25	1.57	16.0	29.3	25.4	6.61	1.72	2.17	1.10	3.97	6.42	2.98
95	L63x8	63	8	7	9.515	7.47	1.85	34.5	67.1	54.6	14.3	1.90	2.40	1.23	7.75	12.3	5.47
96	L70x8	70	8	8	10.67	8.37	2.03	48.2	91.9	76.4	20.0	2.12	2.68	1.37	9.68	15.4	6.98
97	L75x8	75	8	9	11.50	9.03	2.15	60.0	113	95.1	24.9	2.28	2.88	1.47	11.2	17.9	8.19
98	L80x8	80	8	9	12.30	9.66	2.27	73.5	137	117	30.4	2.44	3.08	1.57	12.8	20.6	9.46
99	L80x10	80	10	9	15.13	11.9	2.35	88.4	172	140	36.8	2.42	3.04	1.56	15.6	24.8	11.1
100	L90x8	90	8	10	13.94	10.9	2.52	106	195	169	44.0	2.76	3.48	1.78	16.4	26.6	12.4
101	L90X10	90	10	10	17.17	13.5	2.59	129	244	204	53.3	2.74	3.45	1.76	20.1	32.0	14.5
102	L100x8	100	8	12	15.64	12.3	2.76	148	267	235	61.4	3.08	3.88	1.98	20.5	33.2	15.8
103	L100x10	100	10	12	19.26	15.1	2.84	180	334	285	74.4	3.05	3.84	1.96	25.1	40.3	18.5
104	L110x10	100	10	12	21.26	16.7	3.09	242	445	384	100	3.38	4.25	2.17	30.6	49.4	22.9
105	L125x12	125	12	14	28.91	22.7	3.53	423	783	671	175	3.83	4.82	2.46	41.2	76.0	35.0
106	L140x12	140	12	14	32.51	25.5	3.90	604	1100	959	249	4.31	5.43	2.76	59.8	96.9	45.0
107	L160x12	160	12	16	37.44	29.4	4.39	917	1640	1460	377	4.95	6.24	3.18	79.0	129	60.7
108	L200x16	200	16	18	62.01	48.7	5.54	2370	4270	3760	971	6.18	7.79	3.96	164	266	124



Q235 STEEL TUBE Q235 钢管 (GB/T 21835-2008)

SHAPE CODE 型钢库号	MEMBER DESIGNATION 构件型号	DIMENSIONS 截面尺寸 (mm)		AREA OF SECTION 截面面积 (cm <sup>2</sup> )	NOMINAL WEIGHT PER METER 理论重量 (kg/m)	MOMENT OF INERTIA 惯性矩 (cm <sup>4</sup> ) I	SECTION MODULUS 截面模量 (cm <sup>3</sup> ) W	RADIUS OF GYRATION 惯性半径 (cm) i
		D	t					
141	φ33.7x3.2	33.7	3.2	3.06	2.41	3.60	2.14	1.08
142	φ42.4x3.2	42.4	3.2	3.94	3.09	7.62	3.59	1.39



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CHINA HUANQU CONTRACTING & ENGINEERING (BEIJING) CO., LTD.

型钢特性表及库号(4/4)  
SHAPE PROPERTIES LIST & BANK CODE (4/4)

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证书编号  
CERTIFICATE NO. A1100011

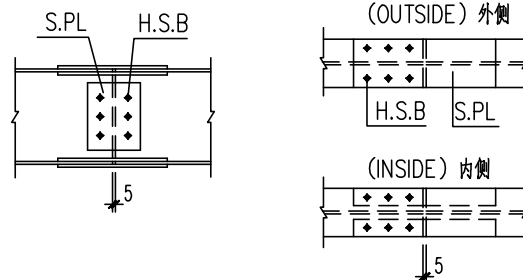
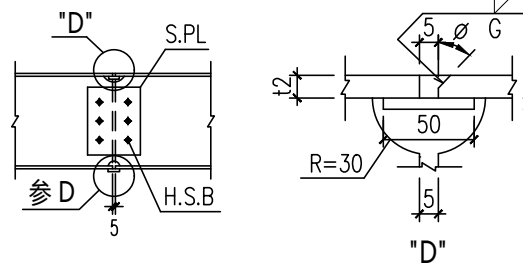
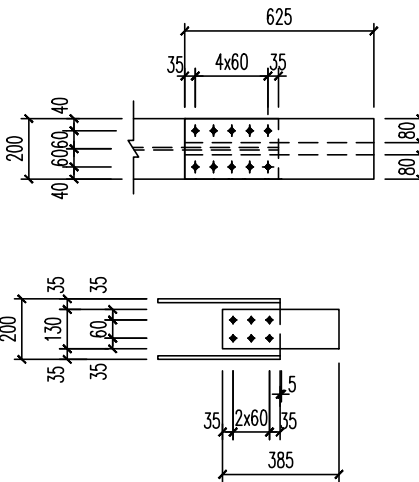
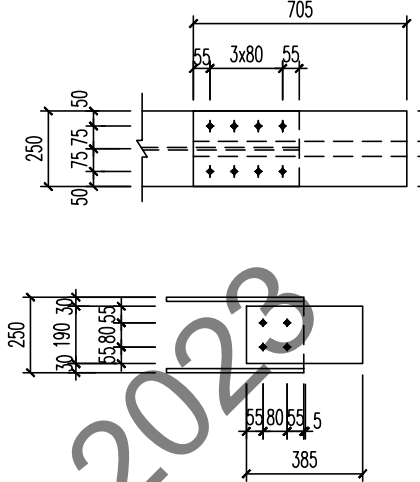
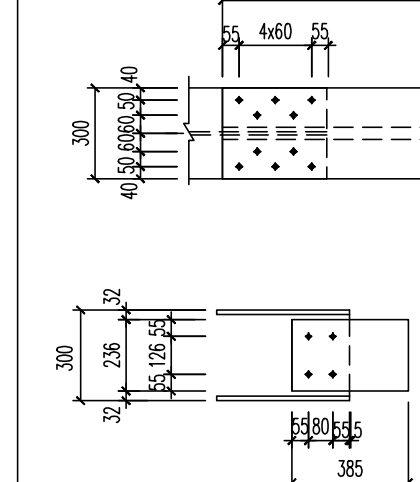
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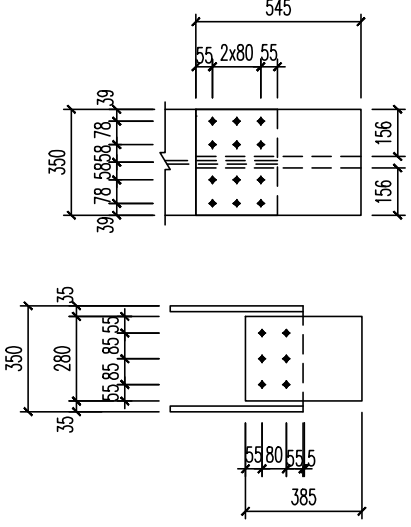
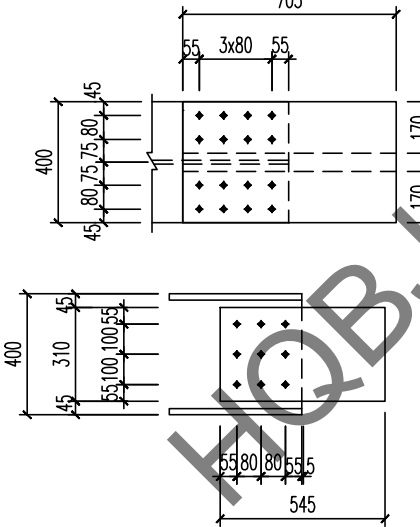
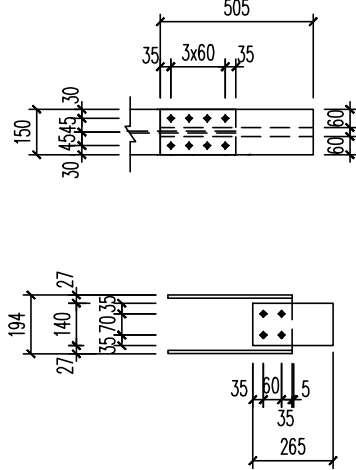
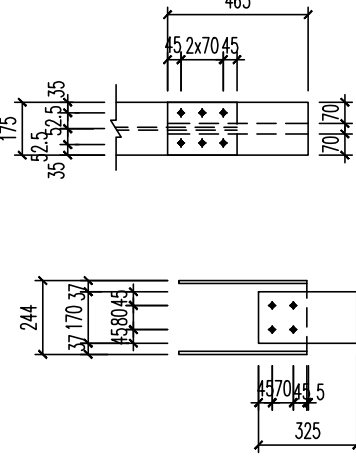
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第 9 张 共 49 张  
OF

2023	2023-12-30	版次 REV	曹力慧	设计 DESIGN	易生	校核 CHKD	郑建华	审核 DISC APP.
			曹力慧		易生		郑建华	
			曹力慧		易生		郑建华	

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		MEMBER 构件	505 HW200x200x8x12	506 HW250x250x9x14	507 HW300x300x10x15
<div>TYPE-A"1"</div> <div></div> <div>TYPE-A"2"</div> <div></div> <div>t2&lt;16 φ=45° t2≥16 φ=55°</div>		DETAIL 详图			
单侧翼缘 EACH FLANGE	H.S. BOLT 高强螺栓	2x10 – M16	2x8 – M24	2x10 – M24	
	S.PL (OUTSIDE) 外拼接板	PL – 10x200x625	PL – 10x250x705	PL – 12x300x705	
	S.PL (INSIDE) 内拼接板	2PL – 12x80x625	2PL – 12x100x705	2PL – 14x130x705	
腹板 WEB	H.S. BOLT 高强螺栓	2x6 – M16	2x4 – M24	2x4 – M24	
	S.PL 拼接板	2PL – 8x385x130	2PL – 8x385x190	2PL – 10x385x236	

508 HW350x350x12x19	509 HW400x400x13x21	512 HM194x150x6x9	513 HM244x175x7x11
			
2x12 – M24	2x16 – M24	2x8 – M16	2x6 – M20
PL – 14x350x545	PL – 14x400x705	PL – 8x150x505	PL – 10x175x465
2PL – 16x156x545	2PL – 16x170x705	2PL – 10x60x505	2PL – 12x70x465
2x6 – M24	2x9 – M24	2x4 – M16	2x4 – M20
2PL – 10x385x280	2PL – 10x545x310	2PL – 6x265x140	2PL – 6x325x170



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第 10 张 共 49 张  
OF

类型-A 梁拼接 (1/4)

TYPE-A MOMENT SPLICE FOR GIRDERS & BEAMS (1/4)



2023	2023-12-30	曹力心 曹力心	曹力心	易生/姜晨玉 易生/姜晨玉	郑建华 郑建华
版次 REV	日期 DATE	设计 DESIGN	校核 CKD	审核 DISC APP.	


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 CHINA HUANQIU CONTRACTING & ENGINEERING (BEIJING) CO., LTD.

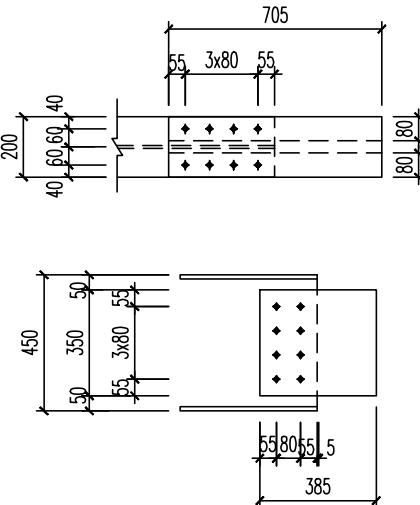
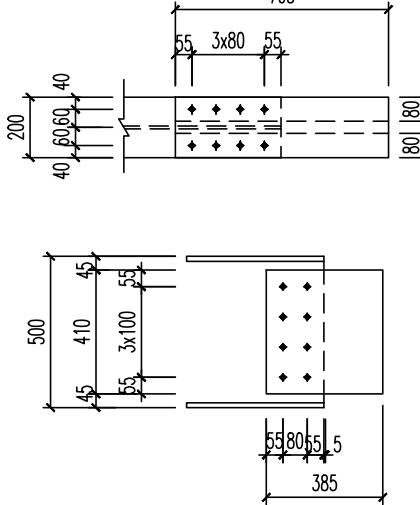
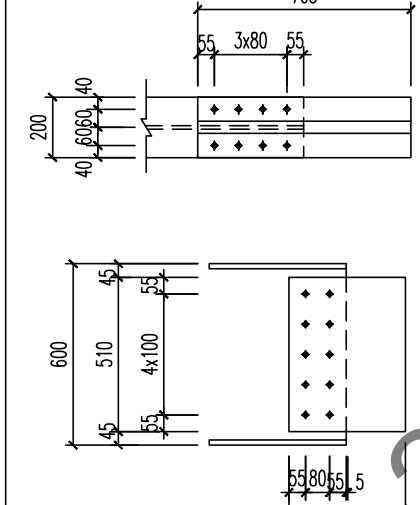
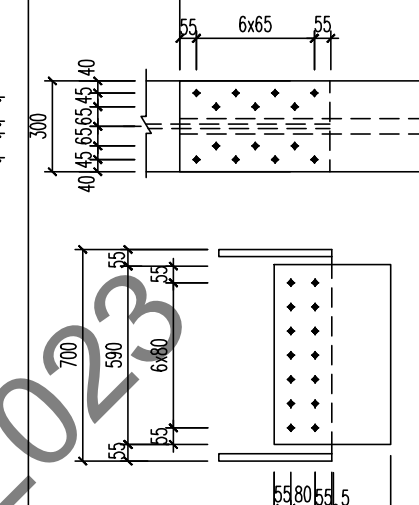
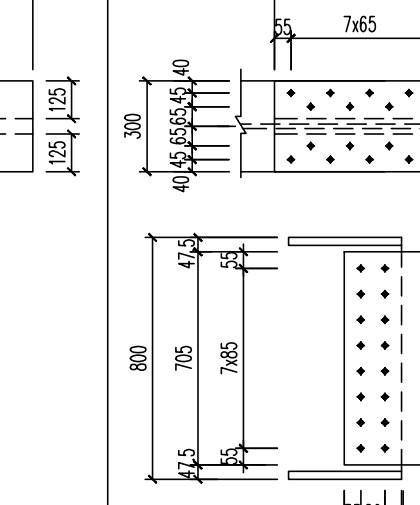
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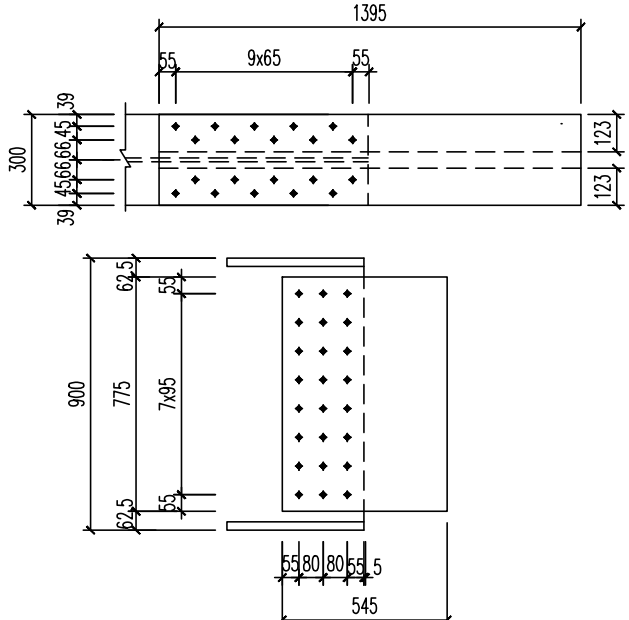
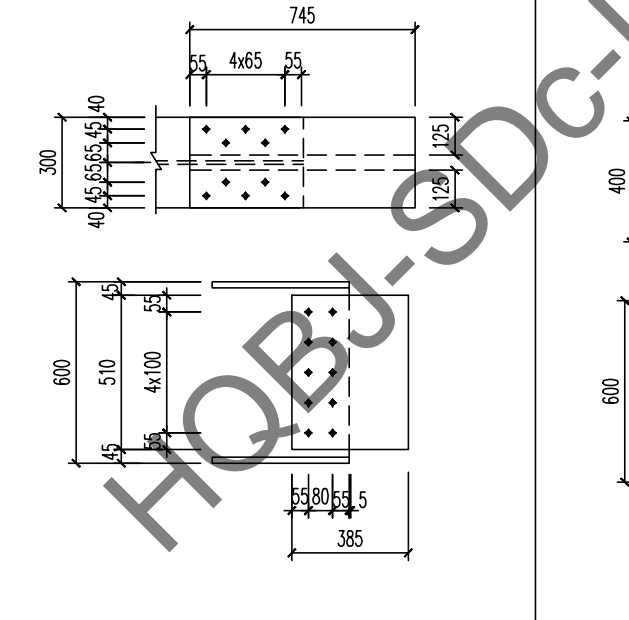
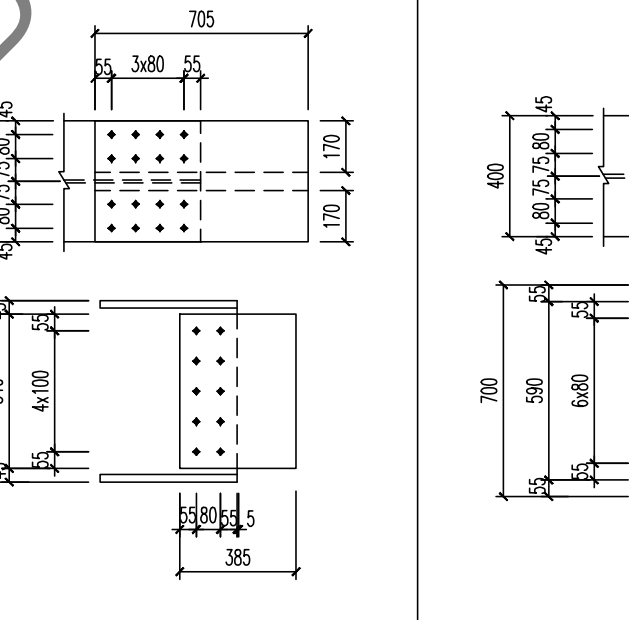
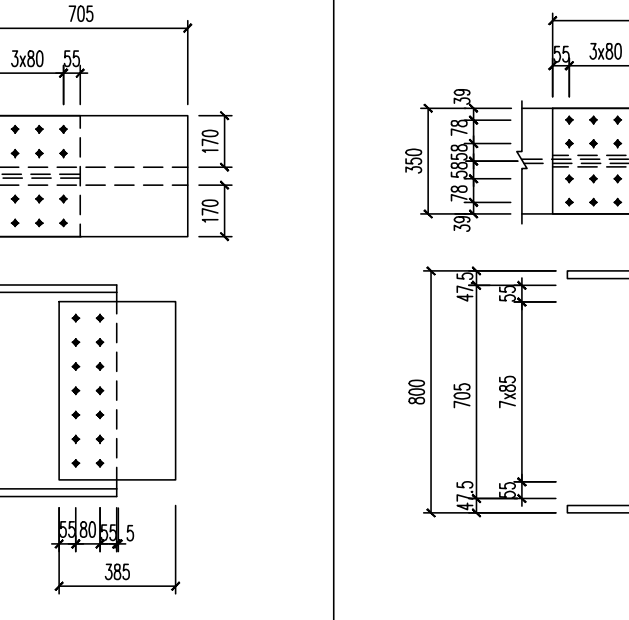
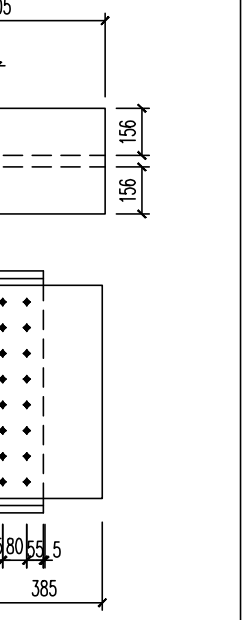
标准图 STD. DWG.	HQBJ-SDc-D19-3001-2023	第 11 张 共 49 张 OF
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519 HM588x300x12x20	523 HN200x100x5.5x8	524 HN250x125x6x9	525 HN300x150x6.5x9	526 HN350x175x7x11	527 HN400x200x8x13
2x12 – M24				2x8 – M20	2x8 – M24
PL – 14x300x825	FLANGE GROOVE WELDING 翼缘坡口焊	FLANGE GROOVE WELDING 翼缘坡口焊	FLANGE GROOVE WELDING 翼缘坡口焊	PL – 10x175x605	PL – 12x200x705
2PL – 16x130x825				2PL – 12x70x605	2PL – 14x80x705
2x10 – M24	2x4 – M20	2x4 – M20	2x6 – M20	2x6 – M20	2x6 – M24
2PL – 10x385x508	2PL – 6x325x160	2PL – 8x325x180	2PL – 8x325x230	2PL – 8x325x290	2PL – 8x385x310

		曹力慧	设计	审核
2023	2023-12-30	易生姜晨玉	校核	审核
版次	日期	设计	校核	审核
REV	DATE	DESIGN	CHECK	DISC APP.

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MEMBER 构件		528	HN450x200x9x14	529	HN500x200x10x16	530	HN600x200x11x17	531	HN700x300x13x24	532	HN800x300x14x26
单侧翼缘 EACH FLANGE											
		H.S. BOLT 高强螺栓		2x8 - M24		2x8 - M24		2x14 - M24		2x16 - M24	
		S.PL (OUTSIDE) 外拼接板		PL - 12x200x705		PL - 14x200x705		PL - 18x300x1005		PL - 18x300x1135	
		S.PL (INSIDE) 内拼接板		2PL - 14x80x705		2PL - 16x80x705		2PL - 20x125x1005		2PL - 20x125x1135	
		H.S. BOLT 高强螺栓		2x8 - M24		2x10 - M24		2x14 - M24		2x16 - M24	
腹板 WEB		S.PL 拼接板		2PL - 8x385x350		2PL - 10x385x410		2PL - 10x385x510		2PL - 10x385x590	

533	HN900x300x16x28	536	WH600x300x10x20	537	WH600x400x10x25	538	WH700x400x12x25	539	WH800x350x14x25
									
2x20 - M24		2x10 - M24		2x16 - M24		2x16 - M24		2x16 - M24	
PL - 18x300x1395		PL - 14x300x745		PL - 16x400x705		PL - 18x400x705		PL - 18x350x705	
2PL - 20x123x1395		2PL - 16x125x745		2PL - 18x170x705		2PL - 20x170x705		2PL - 20x156x705	
2x24 - M24		2x10 - M24		2x10 - M24		2x14 - M24		2x16 - M24	
2PL - 14x545x775		2PL - 10x385x510		2PL - 10x385x510		2PL - 10x385x590		2PL - 12x385x705	



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类型-A 梁拼接 (3/4)  
TYPE-A MOMENT SPLICE FOR GIRDERS & BEAMS (3/4)

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2023	2023-12-30	曹力慧	易宝生	郑建华
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MEMBER 构件			540 WH800x400x14x25	541 WH900x400x14x25	542 WH900x450x14x30	543 WH1000x400x16x30	544 WH1000x500x16x30
DETAIL 详图							
单侧翼缘 EACH FLANGE	H.S. BOLT 高强螺栓		2x20 – M24	2x20 – M24	2x24 – M24	2x24 – M24	2x28 – M24
	S.PL (OUTSIDE) 外拼接板		PL – 18x400x865	PL – 18x400x865	PL – 22x450x1025	PL – 22x400x1025	PL – 22x500x1185
	S.PL (INSIDE) 内拼接板		2PL – 20x170x865	2PL – 20x170x865	2PL – 25x190x1025	2PL – 25x170x1025	2PL – 25x210x1185
腹板 WEB	H.S. BOLT 高强螺栓		2x16– M24	2x24– M24	2x24– M24	2x27– M24	2x27– M24
	S.PL 拼接板		2PL – 12x385x705	2PL – 12x545x740	2PL – 12x545x740	2PL – 14x545x870	2PL – 14x545x870

545 WH1100x400x20x36		546 WH1100x500x20x36	547 WH1200x500x20x36	548 WH1200x600x20x36
2x28 – M24		2x34– M24	2x34 – M24	2x36– M24
PL – 25x400x1185		PL – 22x500x1425	PL – 22x500x1425	PL – 25x600x1025
2PL – 25x170x1185		2PL – 25x210x1425	2PL – 25x210x1425	2PL – 25x270x1025
2x36– M24		2x36– M24	2x39– M24	2x39– M24
2PL – 16x545x990		2PL – 16x545x990	2PL – 16x545x1070	2PL – 16x545x1070



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类型-A 梁拼接 (4/4)

TYPE-A MOMENT SPLICE FOR GIRDERS & BEAMS (4/4)





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MEMBER 构件		502	HW125x125x6.5x9	503	HW150x150x7x10	504	HW175x175x7.5x11	505	HW200x200x8x12	506	HW250x250x9x14	507	HW300x300x10x15	508	HW350x350x12x19
WEB 腹板	DETAIL 详图														
	H.S.B 高强螺栓	2 – M20		2 – M20		2 – M24		2 – M24		2 – M24		2 – M24		3 – M24	
	G.PL (单/双) 连接板	PL – 12 (P <sub>2</sub> =90)		PL – 12 (P <sub>2</sub> =90)		PL – 12 (P <sub>2</sub> =125)		PL – 12 (P <sub>2</sub> =140)		PL – 14/2PL – 8		PL – 16/2PL – 10		PL – 16/2PL – 10	
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	6		6		6		8		8		8		10	

MEMBER 构件		509	HW400x400x13x21	511	HM148x100x6x9	512	HM194x150x6x9	513	HM244x175x7x11	514	HM294x200x8x12	515	HM340x250x9x14
WEB 腹板	DETAIL 详图												
	H.S.B 高强螺栓	3 – M24		2 – M20		2 – M20		2 – M24		2 – M24		3 – M24	
	G.PL (单/双) 连接板	PL – 18/2PL – 12		PL – 10 (P <sub>2</sub> =100)		PL – 12/2PL – 6		PL – 12/2PL – 8		PL – 14/2PL – 10		PL – 14/2PL – 8	
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	10		6		6		6		8		8	

MEMBER 构件		516	HM390x300x10x16	517	HM440x300x11x18	518	HM488x300x11x18	519	HM588x300x12x20	522	HN150x75x5x7	523	HN200x100x5.5x8
WEB 腹板	DETAIL 详图												
	H.S.B 高强螺栓	3 – M24		4 – M24		5 – M24		6 – M24		2 – M20		2 – M20	
	G.PL (单/双) 连接板	PL – 14/2PL – 10		PL – 16/2PL – 10		PL – 16/2PL – 10		PL – 16/2PL – 10		PL – 10 (P <sub>2</sub> =100)		PL – 10/2PL – 6	
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	8		10		10		10		6		6	

MEMBER 构件		524	HN250x125x6x9	525	HN300x150x6.5x9	526	HN350x175x7x11	527	HN400x200x8x13	528	HN450x200x9x14	529	HN500x200x10x16	530	HN600x200x11x17
WEB 腹板	DETAIL 详图														
	H.S.B 高强螺栓	2 – M24		2 – M24		3 – M24		4 – M24		4 – M24		5 – M24		6 – M24	
	G.PL (单/双) 连接板	PL – 10/2PL – 8		PL – 12/2PL – 10		PL – 12/2PL – 8		PL – 12/2PL – 8		PL – 12/2PL – 8		PL – 14/2PL – 8		PL – 14/2PL – 10	
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	6		6		6		8		8		8		8	



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类型-B 梁铰接 (2/4)  
TYPE – B SHEAR CONNECTIONS FOR GIRDERS & BEAMS

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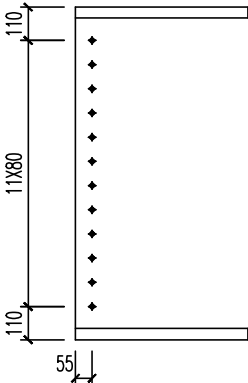
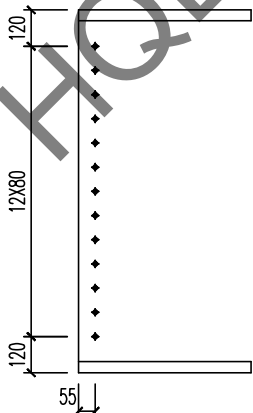
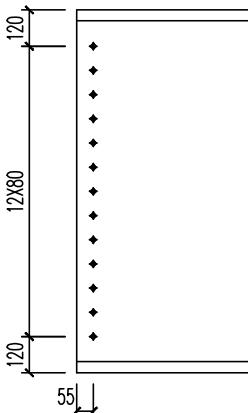
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		秦绪福		易主生/姜晨玉	校核	审核

MEMBER 构件		546 WH1100x500x20x36	547 WH1200x500x20x36	548 WH1200x600x20x36
WEB 腹板	DETAIL 详图			
	H.S.B 高强螺栓	12 – M24	13 – M24	13 – M24
	G.PL(单/双) 连接板	PL – 24/2PL – 16	PL – 24/2PL – 16	PL – 24/2PL – 16
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	14	14	14



	2023-12-30	日期 DATE		
2023	版次 REV			
	设计 DESIGN		审核 CHKD	审核 DISC APP.
秦伟福	易宝生 姜晨玉	郑建华		

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MEMBER 构件		559 <i>I16</i>	560 <i>I18</i>	561 <i>I20a</i>	562 <i>I22a</i>	563 <i>I25a</i>	564 <i>I28a</i>	565 <i>I32a</i>
WEB 腹板	DETAIL 详图							
	H.S.B 高强螺栓	2 – M20	2 – M20	2 – M20	2 – M20	2 – M24	2 – M24	2 – M24
	G.PL (单/双) 连接板	PL – 10 (P <sub>2</sub> =100)	PL – 10 (P <sub>2</sub> =120)	PL – 10/2PL – 6	PL – 12/2PL – 8	PL – 12/2PL – 8	PL – 14/2PL – 10	PL – 16/2PL – 10
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	6	6	8	8	8	8	8

MEMBER 构件		566 <i>I36a</i>	567 <i>I40a</i>	568 <i>I45a</i>		572 [10]	573 [12.6]	574 [14a]
WEB 腹板	DETAIL 详图							
	H.S.B 高强螺栓	3– M24	3– M24	4– M24		2 – M16	2 – M20	2 – M20
	G.PL (单/双) 连接板	PL – 16/2PL – 10	PL – 16/2PL – 10	PL – 16/2PL – 10		PL – 10 (P <sub>2</sub> =70)	PL – 10 (P <sub>2</sub> =90)	PL – 10 (P <sub>2</sub> =100)
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	8	8	10		6	6	6

MEMBER 构件		575 [16a]	576 [18a]	577 [20a]	578 [22a]	579 [25a]	580 [28a]	581 [32a]
WEB 腹板	DETAIL 详图							
	H.S.B 高强螺栓	2 – M20	2 – M20	2 – M20	2 – M20	2 – M24	2 – M24	3– M24
	G.PL (单/双) 连接板	PL – 10 (P <sub>2</sub> =110)	PL – 10 (P <sub>2</sub> =120)	PL – 10	PL – 10	PL – 10	PL – 12	PL – 12
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	6	6	6	6	6	8	8

MEMBER 构件		582 [36a]
WEB 腹板	DETAIL 详图	
	H.S.B 高强螺栓	3– M24
	G.PL (单/双) 连接板	PL – 14
	WELD SIZE (h <sub>f0</sub> ) 焊缝高度	8



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类型-B 梁铰接 (4/4)

TYPE – B SHEAR CONNECTIONS FOR GIRDERS & BEAMS

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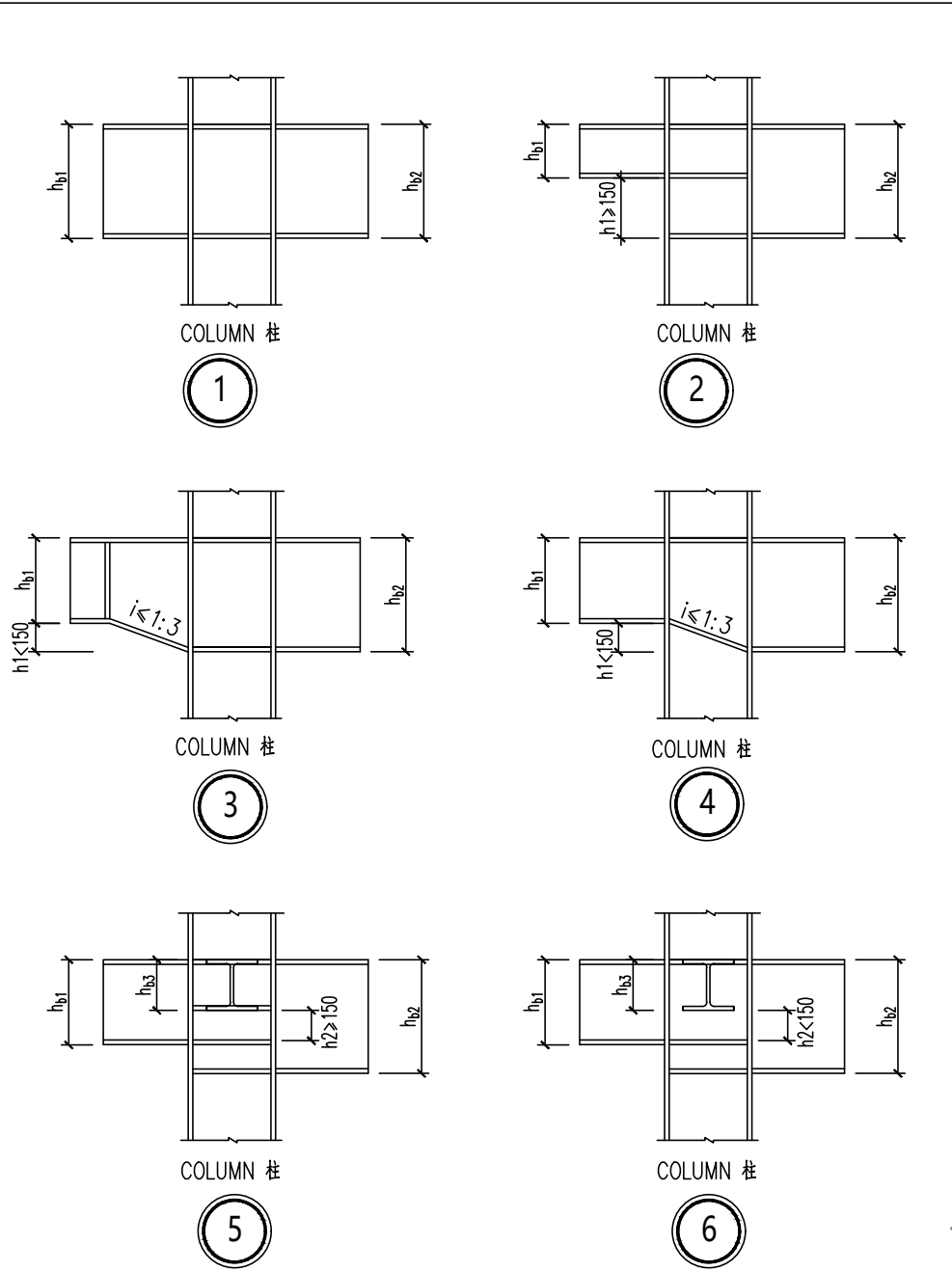
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[illegible]

2023	2023-12-30	曹力慧	曹力慧	易生	郑建华
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SCHEMATIC DRAWING OF COLUMN STIFFENERS 柱加劲板示意图



NOTES: 说明

1. WHEN THE COLUMN IS CONNECTED BY MAIN BEAMS ALONG BOTH THE STRONG-AXIS AND WEAK-AXIS DIRECTION, THE THICKER STIFFENER PLATE IS TAKEN.

当柱强轴方向均有梁时，加劲板厚取较厚值。

2. THE STIFFENER PLATES SHALL BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF COLUMN WEB.

柱加劲板均在柱子腹板两侧对称设置。

3. WHEN BEAM IN WEAK-AXIS DIRECTION IS HIGHER THAN BEAM IN STRONG-AXIS DIRECTION, THE COLUMN HORIZONTAL STIFFENER PLATE SHALL BE SEPARATED TWO PIECES BY THE VERTICAL STIFFENER PLATE.

柱弱轴方向梁高大于强轴方向梁高时，水平加劲板分隔成左右两块，以确保垂直加劲板连通。

PARAMETERS TABLE FOR TYPE-C / TYPE-C 参数表

CODE 型钢库号	GIRDER / 梁截面	$h_f$	$h_{f2}$		t3	b	c
503	HW150x150x7x10	8	8		10	225	150
504	HW175x175x7.5x11	8	8		12	225	150
505	HW200x200x8x12	8	8		12	225	150
506	HW250x250x9x14	8	8		14	225	150
507	HW300x300x10x15	10	10		16	225	150
508	HW350x350x12x19	12	12		20	225	150
509	HW400x400x13x21	12	12		22	225	150
511	HM148x100x6x9	6	6		10	225	150
512	HM194x150x6x9	6	6		10	225	150
513	HM244x175x7x11	8	8		12	225	150
514	HM294x200x8x12	8	8		12	225	150
515	HM340x250x9x14	10	10		14	225	150
516	HM390x300x10x16	10	10		16	225	150
517	HM440x300x11x18	12	12		18	225	150
518	HM488x300x11x18	12	12		18	300	200
519	HM588x300x12x20	12	12		20	300	200
522	HN150x75x5x7	6	-		8	-	-
523	HN200x100x5.5x8	6	6		8	225	150
524	HN250x125x6x9	6	6		10	225	150
525	HN300x150x6.5x9	6	6		10	225	150
526	HN350x175x7x11	8	8		12	225	150
527	HN400x200x8x13	8	8		14	225	150
528	HN450x200x9x14	10	10		14	225	150
529	HN500x200x10x16	10	10		16	300	200
530	HN600x200x11x17	12	12		18	300	200
531	HN700x300x13x24	14	14		24	375	250
532	HN800x300x14x26	14	14		26	450	300
533	HN900x300x16x28	16	16		28	450	300

CODE 型钢库号	GIRDER / 梁截面	$h_f$	$h_{f2}$		t3	b	c
536	WH600x300x10x20	10	10		20	300	200
537	WH600x400x10x25	10	10		25	300	200
538	WH700x400x12x25	12	12		25	375	250
539	WH800x350x14x25	14	14		25	450	300
540	WH800x400x14x25	14	14		25	450	300
541	WH900x400x14x25	14	14		25	450	300
542	WH900x450x14x30	14	14		30	450	300
543	WH1000x400x16x30	16	16		30	525	350
544	WH1000x500x16x30	16	16		30	525	350
545	WH1100x400x20x36	20	20		36	550	375
546	WH1100x500x20x36	20	20		36	550	375
547	WH1200x500x20x36	20	20		36	600	400
548	WH1200x600x20x36	20	20		36	600	400
558	I14	6	-		10	-	-
559	I16	6	-		10	-	-
560	I18	6	-		12	-	-
561	I20a	8	-		12	-	-
562	I22a	8	-		14	-	-
563	I25a	8	-		14	-	-
564	I28a	10	-		14	-	-
565	I32a	10	-		16	-	-
566	I36a	10	-		16	-	-
567	I40a	12	-		18	-	-
568	I45a	12	-		18	-	-



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类型-C 梁与柱的刚接 (2/2)

TYPE-C GIRDER TO COLUMN-MOMENT CONNECTIONS (2/2)



2023	2023-12-30	朱永森	朱永森	易生	郑建华
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4	3	2	1
<div><div><div><div>外侧 (OUTSIDE)</div><div>内侧 (INSIDE)</div></div><div><div>外侧 (OUTSIDE)</div><div>内侧 (INSIDE)</div></div><div><div>外侧 (OUTSIDE)</div><div>内侧 (INSIDE)</div></div></div><div><div>FIG. A 图 A</div><div>FIG. B 图 B</div><div>FIG. C 图 C</div></div><div><div>TYPE-D"1"</div><div>TYPE-D"1a"</div><div>"D" <math>t2 &lt; 16 \ \phi = 45^{\circ}</math> <math>t2 \geq 16 \ \phi = 55^{\circ}</math></div></div></div>			
MEMBER 构件		502 HW125x125x6.5x9	503 HW150x150x7x10
单侧翼缘 EACH FLANGE		H.S. BOLT 高强螺栓 S.PL (OUTSIDE) 外拼接板 S.PL (INSIDE) 内拼接板	FLANGE GROOVE WELDING 翼缘坡口焊
腹板 WEB		H.S. BOLT 高强螺栓 S.PL 拼接板	
		2x3 - M16 2PL - 6x385x80	2x6 - M16 PL - 8x150x385 2PL - 10x60x385 2x3 - M16 2PL - 8x385x100

504 HW175x175x7.5x11	505 HW200x200x8x12	506 HW250x250x9x14	507 HW300x300x10x15	508 HW350x350x12x19
2x6 - M20	2x8 - M20	2x8 - M24	2x10 - M24	2x12 - M24
PL - 8x175x465	PL - 10x200x605	PL - 10x250x705	PL - 12x300x705	PL - 14x350x545
2PL - 10x70x465	2PL - 12x80x605	2PL - 12x100x705	2PL - 14x130x705	2PL - 16x156x545
2x3 - M20	2x4 - M20	2x4 - M24	2x4 - M24	2x6 - M24
2PL - 8x465x125	2PL - 8x325x140	2PL - 8x385x190	2PL - 10x385x220	2PL - 10x385x270



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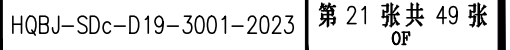
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OF

类型-D 柱拼接 (1/4)  
TYPE-D COLUMN SPLICES (1/4)

[illegible]

516	HM390x300x10x16	517	HM440x300x11x18	518	HM488x300x11x18	519	HM588x300x12x20	522	HN150x75x5x7
2x10 – M24		2x10 – M24		2x10 – M24		2x12 – M24		FLANGE GROOVE WELDING 翼緣坡口焊	
PL – 12x300x705		PL – 14x300x705		PL – 14x300x705		PL – 14x300x825			
2PL – 14x130x705		2PL – 16x130x705		2PL – 16x130x705		2PL – 16x130x825			
2x6 – M24		2x8 – M24		2x8 – M24		2x10 – M24		2x3 – M16	
2PL – 10x385x310		2PL – 10x385x350		2PL – 10x385x410		2PL – 10x385x508		2PL – 6x385x100	



2023	2023-12-30	朱木森	易宝生	郑建华
版次	日期	设计	校核	审核
REV	DATE	DESIGN	CHK	DISC APP.

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523	HN200x100x5.5x8	524	HN250x125x6x9	525	HN300x150x6.5x9	526	HN350x175x7x11	527	HN400x200x8x13	528	HN450x200x9x14
FLANGE GROOVE WELDING 翼缘坡口焊	FLANGE GROOVE WELDING 翼缘坡口焊	FLANGE GROOVE WELDING 翼缘坡口焊			2x6 – M20 PL – 10x175x465 2PL – 12x70x465		2x6 – M24 PL – 12x200x545 2PL – 14x80x545		2x8 – M24 PL – 12x200x705 2PL – 14x80x705		
2x4 – M16	2x4 – M20	2x6 – M20			2x6 – M20		2x6 – M24		2x8 – M24		
2PL – 6x285x130	2PL – 8x325x180	2PL – 8x325x230			2PL – 8x325x270		2PL – 8x385x310		2PL – 8x385x350		

529	HN500x200x10x16	530	HN600x200x11x17	531	HN700x300x13x24	550	WH500x400x14x25	551	WH600x400x18x25
2x8 – M24		2x8 – M24		2x14 – M24		2x14 – M24		2x16 – M24	
PL – 14x200x705		PL – 14x200x705		PL – 18x300x1005		PL – 18x400x705		PL – 18x400x705	
2PL – 16x80x705		2PL – 16x80x705		2PL – 20x125x1005		2PL – 20x170x705		2PL – 20x170x705	
2x8 – M24		2x10 – M24		2x12 – M24		2x12 – M24		2x15 – M24	
2PL – 10x385x410		2PL – 10x385x510		2PL – 10x385x610		2PL – 12x410x510		2PL – 12x545x510	



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标准图  
STD. DWG.

类型-D 柱拼接 (3/4)  
TYPE-D COLUMN SPLICES (3/4)

HQBJ-SDC-D19-3001-2023

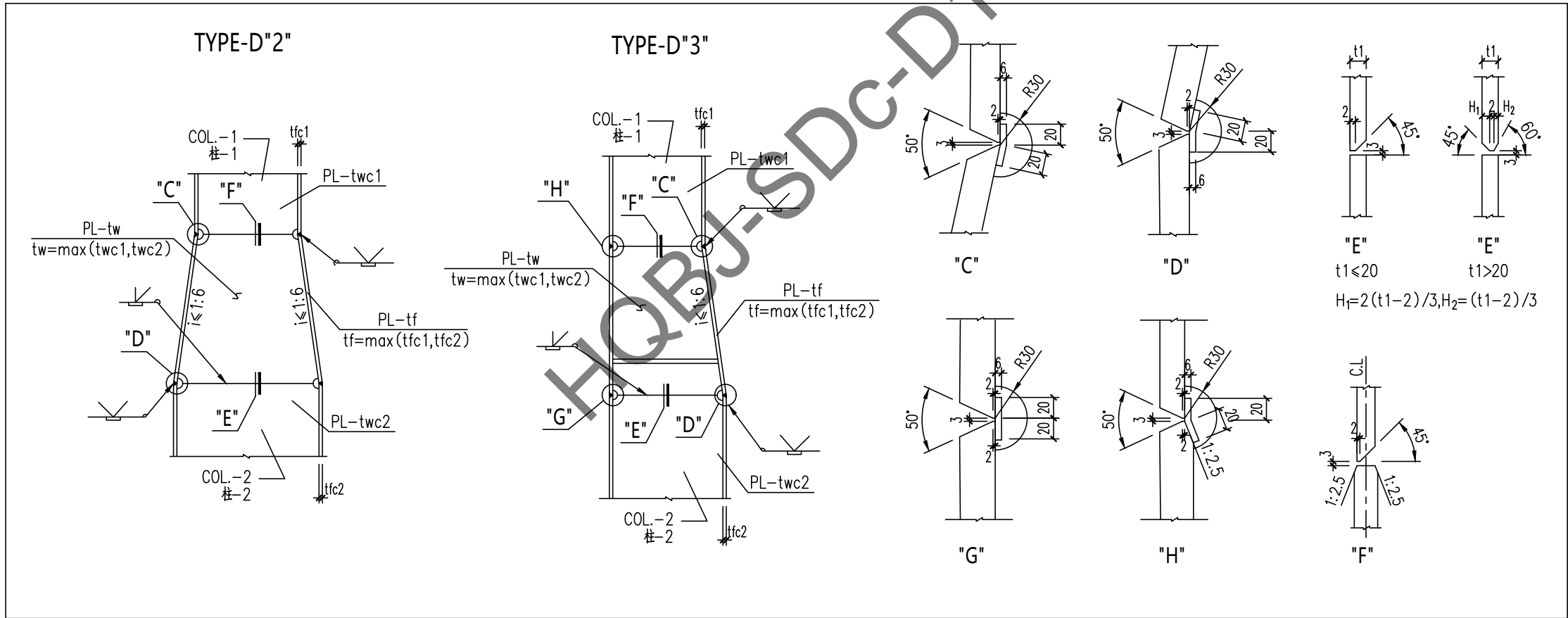
第 22 张 共 49 张  
OF



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2023	版次 REV	2023-12-30	日期 DATE	朱木森	设计 DESIGN	易宝生 姜晨玉	校核 CHK	郑建华	审核 DISC APP.
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4	3	2	1
552 WH700x400x18x25	553 WH800x400x20x30	554 WH900x450x20x36	555 WH1000x500x22x40
2x20 - M24	2x20 - M24	2x24 - M24	2x34 - M24
PL - 18x400x865	PL - 20x400x865	PL - 25x450x1185	PL - 25x500x1425
2PL - 22x170x865	2PL - 25x170x865	2PL - 28x190x1185	2PL - 28x210x1425
2x18 - M24	2x21 - M24	2x24 - M24	2x33 - M24
2PL - 14x545x610	2PL - 16x545x710	2PL - 18x545x810	2PL - 20x545x890



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标准图  
STD. DWG.

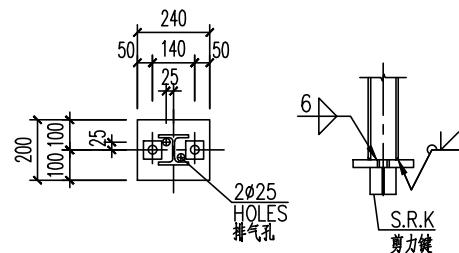
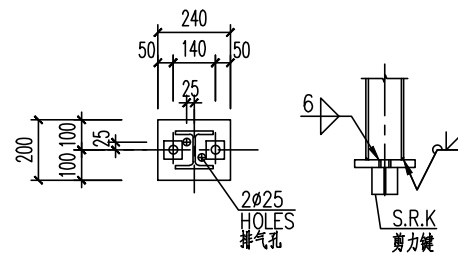
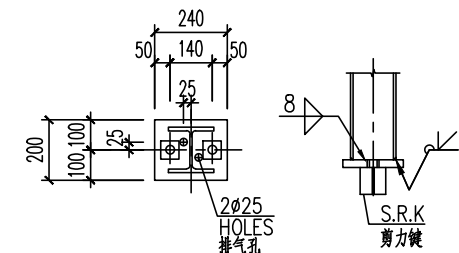
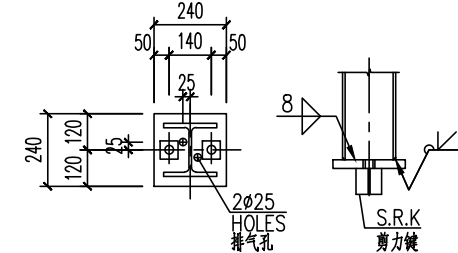
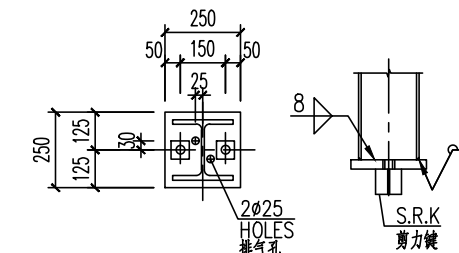
类型-D 柱拼接 (4/4)  
TYPE-D COLUMN SPLICES (4/4)

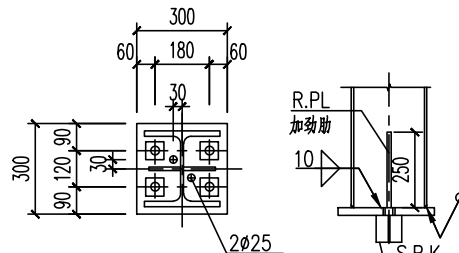
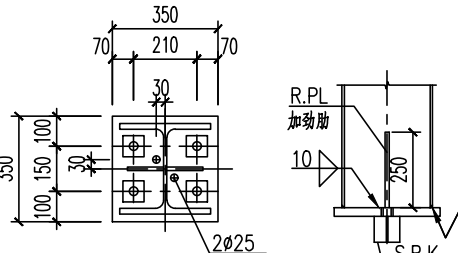
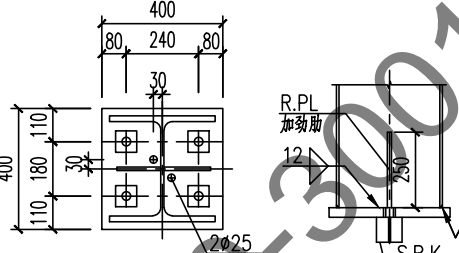
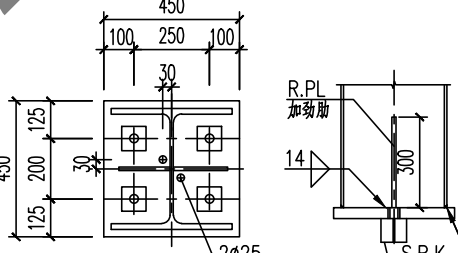
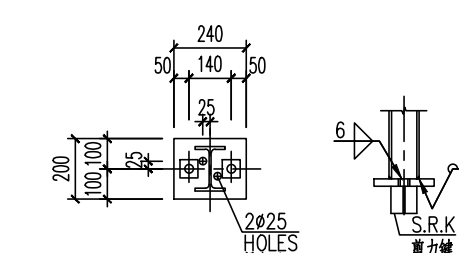
HQBJ-SDc-D19-3001-2023

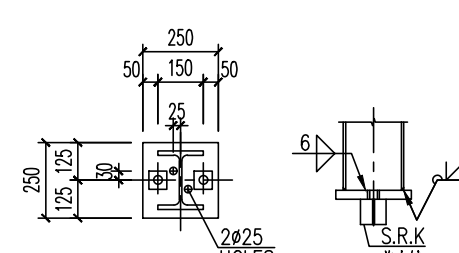
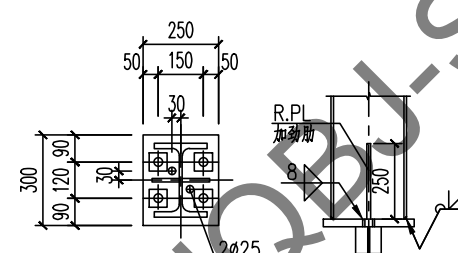
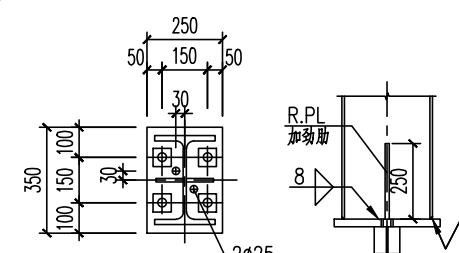
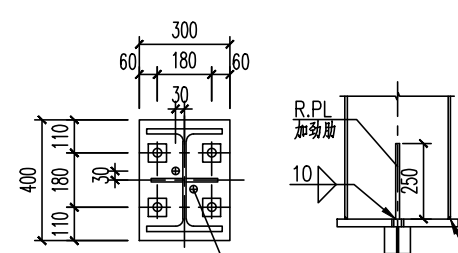
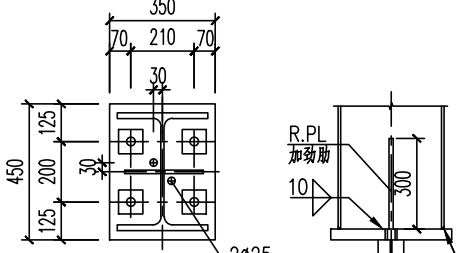
第 23 张 共 49 张  
OF

		魏秉奎	设计	DESIGN
		易宝生 姜晨正	校核	CHK
		郑建华	审核	DISC APP.
2023	2023-12-30		日期	DATE
	版次		REV	

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501 HW100x100x6x8			502 HW125x125x6.5x9			503 HW150x150x7x10			504 HW175x175x7.5x11			505 HW200x200x8x12		
														
A.B	地脚螺栓	2-M20	A.B	地脚螺栓	2-M20	A.B	地脚螺栓	2-M20	A.B	地脚螺栓	2-M20	A.B	地脚螺栓	2-M20
B.PL	柱脚底板	200x240x25	B.PL	柱脚底板	200x240x25	B.PL	柱脚底板	200x240x25	B.PL	柱脚底板	240x240x28	B.PL	柱脚底板	250x250x30
R.PL THK.	加劲肋厚度	---	R.PL THK.	加劲肋厚度	---	R.PL THK.	加劲肋厚度	---	R.PL THK.	加劲肋厚度	---	R.PL THK.	加劲肋厚度	---

506 HW250x250x9x14			507 HW300x300x10x15			508 HW350x350x12x19			509 HW400x400x13x21			511 HM148x100x6x9		
														
A.B	地脚螺栓	4-M20	A.B	地脚螺栓	4-M24	A.B	地脚螺栓	4-M24	A.B	地脚螺栓	4-M30	A.B	地脚螺栓	2-M20
B.PL	柱脚底板	300x300x25	B.PL	柱脚底板	350x350x28	B.PL	柱脚底板	400x400x32	B.PL	柱脚底板	450x450x36	B.PL	柱脚底板	200x240x25
R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	16	R.PL THK.	加劲肋厚度	16	R.PL THK.	加劲肋厚度	---

512 HM194x150x6x9			513 HM244x175x7x11			514 HM294x200x8x12			515 HM340x250x9x14			516 HM390x300x10x16		
														
A.B	地脚螺栓	2-M20	A.B	地脚螺栓	4-M20	A.B	地脚螺栓	4-M24	A.B	地脚螺栓	4-M24	A.B	地脚螺栓	4-M30
B.PL	柱脚底板	250x250x30	B.PL	柱脚底板	300x250x25	B.PL	柱脚底板	350x250x28	B.PL	柱脚底板	400x300x30	B.PL	柱脚底板	450x350x36
R.PL THK.	加劲肋厚度	---	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	14

NOTES 说明:

1. TYPE-E (S.R.K-X) INDICATES REQUIREMENT WITH SHEAR-RESISTANT KEY.  
THE SELECTION OF SHEAR-RESISTANT KEY IS DETERMINED BY DESIGNER.

类型-E (S.R.K-X) 表示柱脚有剪力键, 剪力键的选型由设计师确定

2. TYPE-E INDICATES NO REQUIREMENT WITH SHEAR-RESISTANT KEY.

类型-E 表示柱脚无剪力键

3. CUSHION PLATE TYPE & ANCHOR BOLT HOLES OF BASE PLATE SEE PAGE 26.

垫板选型和底板地脚螺栓开孔见第26页。

4. RIB PLATE DETAIL & SHEAR-RESISTANT KEY TYPE SEE PAGE 26.

加劲肋详图及剪力键选型见第26页。

5. ANCHOR BOLT SCHEDULE SEE PAGE 26.

地脚螺栓表见第26页。



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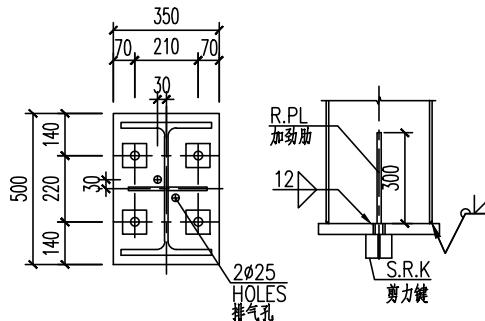
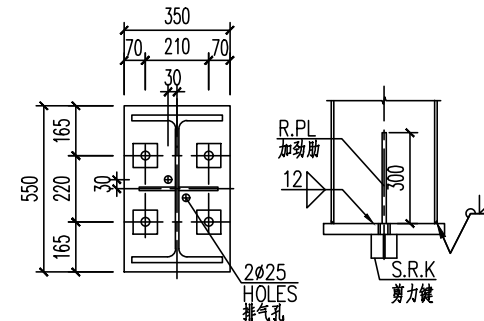
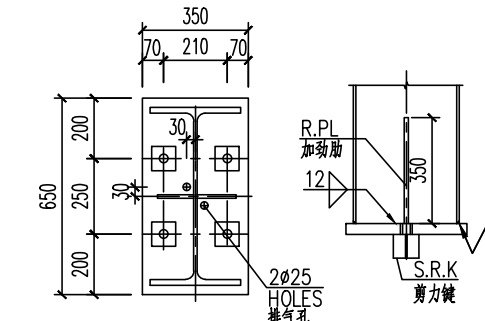
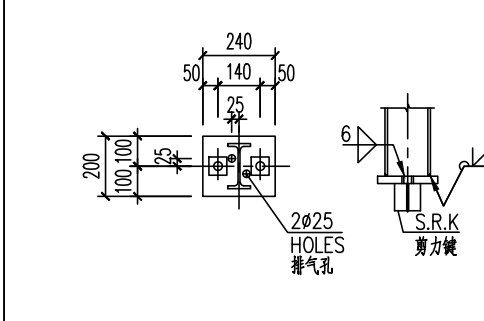
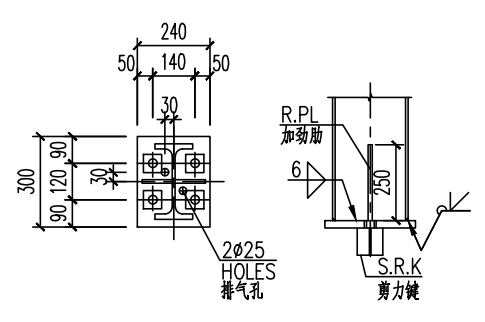
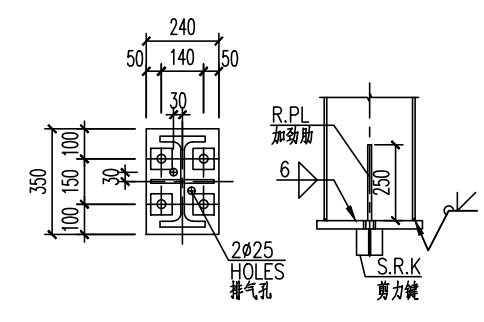
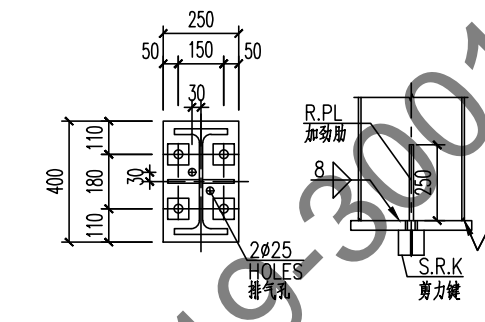
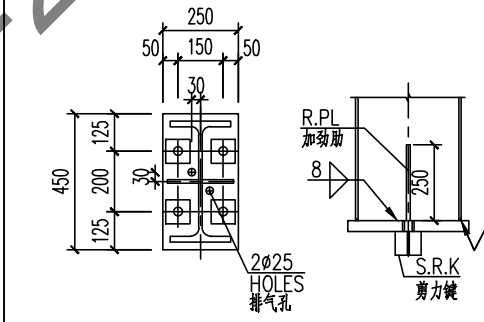
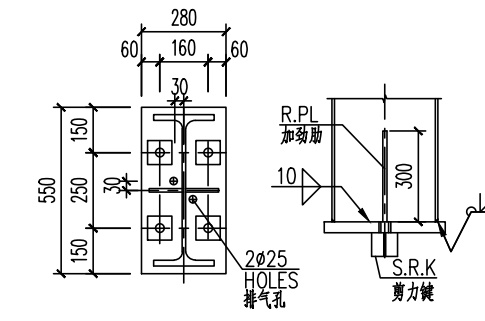
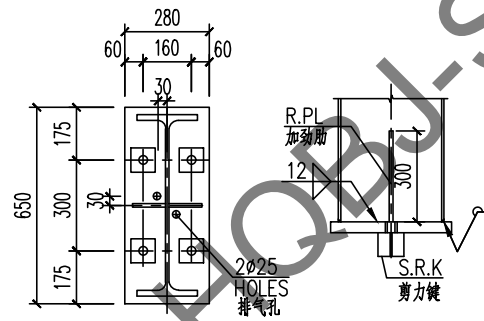
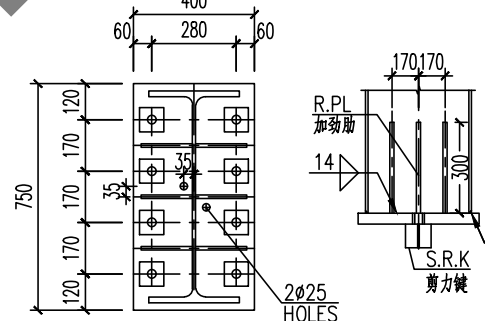
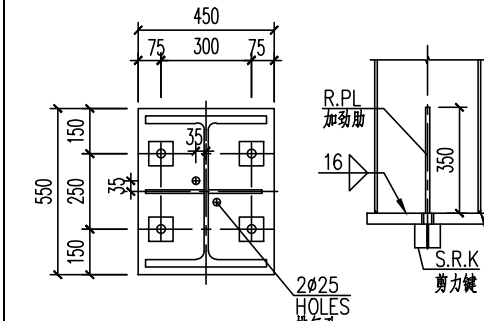
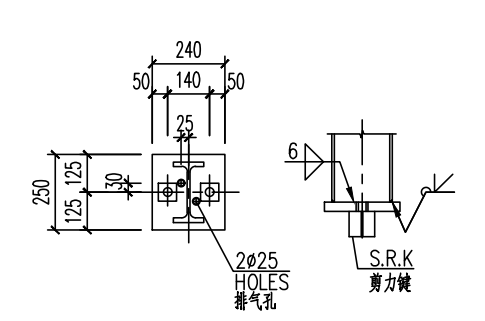
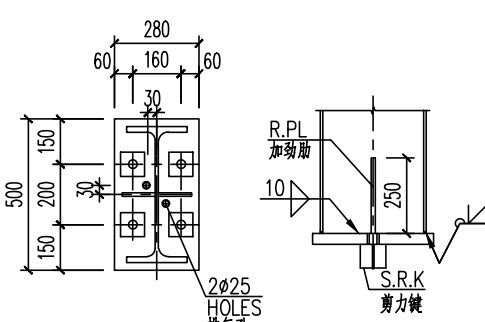
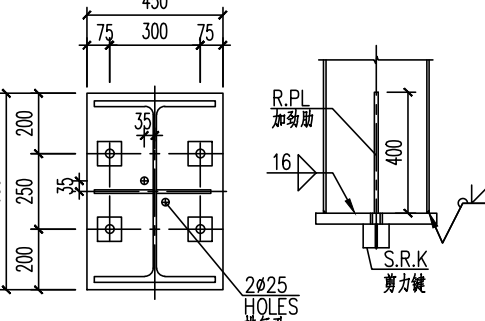
第 24 张 共 49 张  
OF

类型-E 柱脚铰接 (1/3)

TYPE-E HINGE SUPPORT FOR COLUMN BASES (1/3)

2023	2023-12-30	魏秉奎	易宝生	郑建华
版次	日期	设计	校核	审核
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4		3		2		1	
517 HM440x300x11x18		518 HM488x300x11x18		519 HM588x300x12x20		522 HN150x75x5x7	
							
A.B	地脚螺栓	4-M30	A.B	地脚螺栓	4-M36	A.B	地脚螺栓
B.PL	柱脚底板	500x350x40	B.PL	柱脚底板	550x350x45	B.PL	柱脚底板
R.PL THK.	加劲肋厚度	14	R.PL THK.	加劲肋厚度	16	R.PL THK.	加劲肋厚度
524 HN250x125x6x9		525 HN300x150x6.5x9		526 HN350x175x7x11		527 HN400x200x8x13	
							
A.B	地脚螺栓	4-M20	A.B	地脚螺栓	4-M20	A.B	地脚螺栓
B.PL	柱脚底板	300x240x25	B.PL	柱脚底板	350x240x25	B.PL	柱脚底板
R.PL THK.	加劲肋厚度	10	R.PL THK.	加劲肋厚度	10	R.PL THK.	加劲肋厚度
529 HN500x200x10x16		530 HN600x200x11x17		531 HN700x300x13x24		550 WH500x400x14x25	
							
A.B	地脚螺栓	4-M30	A.B	地脚螺栓	4-M30	A.B	地脚螺栓
B.PL	柱脚底板	550x280x40	B.PL	柱脚底板	650x280x40	B.PL	柱脚底板
R.PL THK.	加劲肋厚度	14	R.PL THK.	加劲肋厚度	16	R.PL THK.	加劲肋厚度
523 HN200x100x5.5x8		528 HN450x200x9x14		551 WH600x400x18x25			
							
A.B	地脚螺栓	2-M20	A.B	地脚螺栓	4-M30	A.B	地脚螺栓
B.PL	柱脚底板	250x240x28	B.PL	柱脚底板	500x280x36	B.PL	柱脚底板
R.PL THK.	加劲肋厚度	---	R.PL THK.	加劲肋厚度	14	R.PL THK.	加劲肋厚度

NOTES SEE PAGE 24

说明见第24页



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标准图  
STD. DWG.

类型-E 柱脚铰接 (2/3)

TYPE-E HINGE SUPPORT FOR COLUMN BASES (2/3)

HQBJ-SDc-D19-3001-2023

第 25 张 共 49 张  
OF



2023-12-30	日期 DATE	审核 DISC APP.
2023	版次 REV	设计 DESIGN
	设计 DESIGN	校核 CHK
	校核 CHK	审核 DISC APP.

4

3

2

1

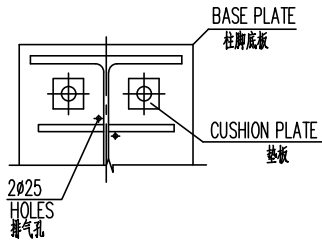
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A.B	地脚螺栓	8-M24	A.B	地脚螺栓	8-M30	A.B	地脚螺栓	8-M36	A.B	地脚螺栓	8-M36
B.PL	柱脚底板	750x450x36	B.PL	柱脚底板	850x450x40	B.PL	柱脚底板	950x500x45	B.PL	柱脚底板	1100x550x45
R.PL THK.	加劲肋厚度	18	R.PL THK.	加劲肋厚度	18	R.PL THK.	加劲肋厚度	22	R.PL THK.	加劲肋厚度	22

NOTES:  
说明:  
1. TYPE-E (S.R.K-X) INDICATES REQUIREMENT WITH SHEAR-RESISTANT KEY.  
THE SELECTION OF SHEAR-RESISTANT KEY IS DETERMINED BY DESIGNER.  
类型-E (S.R.K-X) 表示柱脚有剪力键, 剪力键的选型由设计师确定  
2. TYPE-E INDICATES NO REQUIREMENT WITH SHEAR-RESISTANT KEY.  
类型-E 表示柱脚无剪力键

ANCHOR BOLTS SCHEDULE 地脚螺栓表

		<table><tr><th>D</th><th>TYPE</th><th>L</th><th>S</th><th>R</th><th>t</th><th>c</th></tr><tr><td>M16</td><td>TYPE-A</td><td>400</td><td>85</td><td>32</td><td></td><td></td></tr><tr><td>M20</td><td>TYPE-A</td><td>500</td><td>90</td><td>40</td><td></td><td></td></tr><tr><td>M22</td><td>TYPE-A</td><td>550</td><td>95</td><td>44</td><td></td><td></td></tr><tr><td>M24</td><td>TYPE-A</td><td>600</td><td>100</td><td>48</td><td></td><td></td></tr><tr><td>M30</td><td>TYPE-A</td><td>750</td><td>110</td><td>60</td><td></td><td></td></tr><tr><td>M36</td><td>TYPE-A</td><td>900</td><td>125</td><td>72</td><td></td><td></td></tr><tr><td>M42</td><td>TYPE-B</td><td>1050</td><td>140</td><td></td><td>20</td><td>140</td></tr><tr><td>M48</td><td>TYPE-B</td><td>1200</td><td>150</td><td></td><td>20</td><td>200</td></tr><tr><td>M52</td><td>TYPE-B</td><td>1300</td><td>160</td><td></td><td>20</td><td>200</td></tr><tr><td>M56</td><td>TYPE-B</td><td>1400</td><td>170</td><td></td><td>20</td><td>200</td></tr></table>	D	TYPE	L	S	R	t	c	M16	TYPE-A	400	85	32			M20	TYPE-A	500	90	40			M22	TYPE-A	550	95	44			M24	TYPE-A	600	100	48			M30	TYPE-A	750	110	60			M36	TYPE-A	900	125	72			M42	TYPE-B	1050	140		20	140	M48	TYPE-B	1200	150		20	200	M52	TYPE-B	1300	160		20	200	M56	TYPE-B	1400	170		20	200
D	TYPE	L	S	R	t	c																																																																									
M16	TYPE-A	400	85	32																																																																											
M20	TYPE-A	500	90	40																																																																											
M22	TYPE-A	550	95	44																																																																											
M24	TYPE-A	600	100	48																																																																											
M30	TYPE-A	750	110	60																																																																											
M36	TYPE-A	900	125	72																																																																											
M42	TYPE-B	1050	140		20	140																																																																									
M48	TYPE-B	1200	150		20	200																																																																									
M52	TYPE-B	1300	160		20	200																																																																									
M56	TYPE-B	1400	170		20	200																																																																									
<div>TYPE-A</div> <div>TYPE-B</div>		<div>NOTES:</div> <div>1.S IS THE THREAD LENGTH. S OF ANCHOR BOLTS FOR COLUMN WITH STOOL SEE THIS SCHEDULE, OTHERWISE S=P SEE THE ENGINEERING DRAWINGS.</div> <div>2.TWO NUTS</div> <div>3.THE LENGTH P OF PROJECTION SEE THE ENGINEERING DRAWINGS.</div> <div>4.Q355</div> <div>5.CONCRETE GRADE NOT LESS THAN C30</div> <div>注:</div> <div>1. S 为丝扣长度, 带锚栓托座的柱脚地脚螺栓S见本表, 不带锚栓托座的柱脚地脚螺栓S=P, 详见工程图</div> <div>2. 双螺帽</div> <div>3. 伸出长度 P 见工程图</div> <div>4. Q355</div> <div>5. 混凝土不低于C30</div>																																																																													

CUSHION PLATE TYPE & ANCHOR BOLT HOLES OF BASE PLATE  
垫板选型和底板地脚螺栓开孔

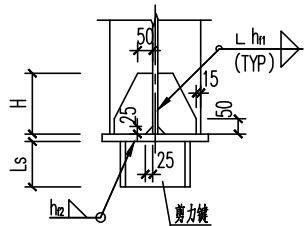


ANCHOR BOLT 地脚螺栓D (mm)	CUSHION PLATRE SIZE 垫板尺寸 (mm)	DIAMETER OF CUSHION PLATE BOLT HOLE 垫板开孔直径 (mm)	HOLES OF BASE PLATE 柱脚底板开孔 (mm)
M20	60x60x14	22	28
M22	60x60x16	24	30
M24	70x70x18	26	32
M30	80x80x20	32	40
M36	100x100x25	38	46
M42	110x110x28	44	52

TYPE - E<sub>0</sub> WELDING FOR COLUMN BASES 类型-E<sub>0</sub> 柱脚焊接

EMB.PL 预埋件 (CONCRETE WORK) B.PL-16 APPLY TO H-SHAPE AND I-SHAPE FOR SECTION HEIGHT h<200 适用于截面高度 h<200 的 H型钢和工字钢	EMB.PL 预埋件 (CONCRETE WORK) B.PL-16 APPLY TO CHANNEL FOR SECTION HEIGHT h<200 适用于截面高度 h<200 的槽钢	EMB.PL 预埋件 (CONCRETE WORK) B.PL-16 APPLY TO ANGLE 适用于角钢
NOTE: 1: hf=t2-1mm & hf>6mm. 2: APPLY TO PLATFORM WITHOUT SUPPORTING EQUIPMENT. 该柱脚形式适用于非支承设备的小平台。		

RIB PLATE DETAIL & SHEAR-RESISTANT KEY TYPE 加劲肋详图及剪力键选型



NOTES 说明:  
1. Ls: SEE DESIGN DRAWING.  
Ls: 见设计图纸。

SHEAR-RESISTANT KEY WELD SIZE 剪力键焊缝尺寸

S.R.K-X 类型	S.R.K DESIGNATION 剪力键型号	WELD SIZE 焊缝 h <sub>2</sub> (mm)
S.R.K-1	I10	4
S.R.K-2	I14	5
S.R.K-3	HW100x100x6x8	6
S.R.K-4	HW150x150x7x10	8
S.R.K-5	HW200x200x8x12	8
S.R.K-6	HW250x250x9x14	10

RIB PLATE WELD SIZE 加劲肋角焊缝尺寸

R.PL THK 加劲肋厚度	8	10	12	14	16	18	20	22	25	28
WELD SIZE 焊缝 h <sub>2</sub> (mm)	6	6	8	10	10	12	12	14	16	16



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OF

类型-E 柱脚铰接 (3/3)

TYPE-E HINGE SUPPORT FOR COLUMN BASES (3/3)

4

3

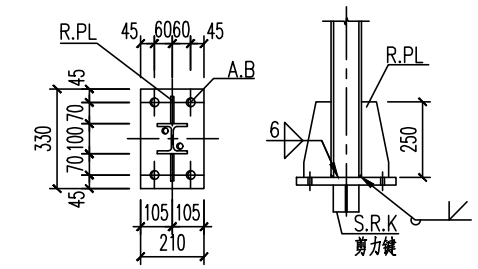
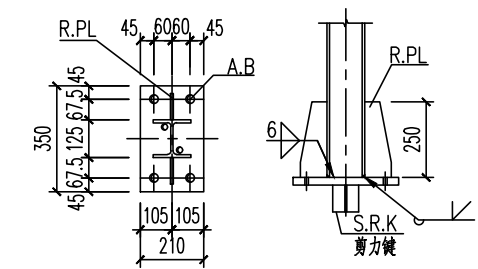
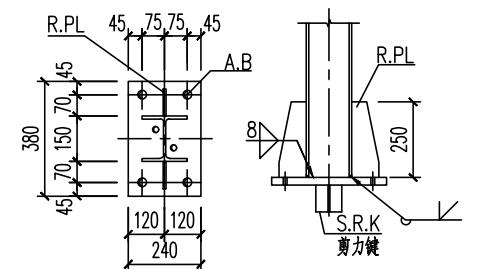
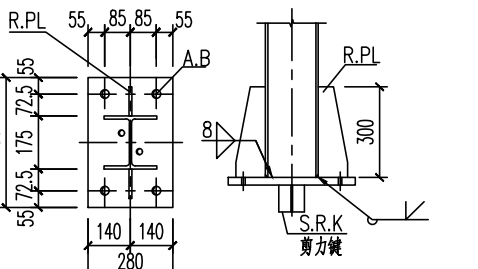
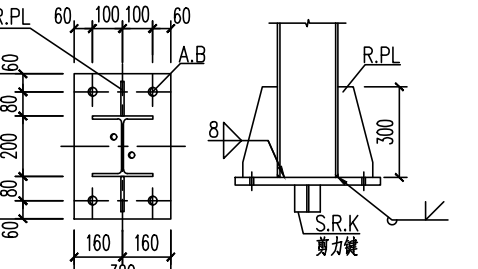
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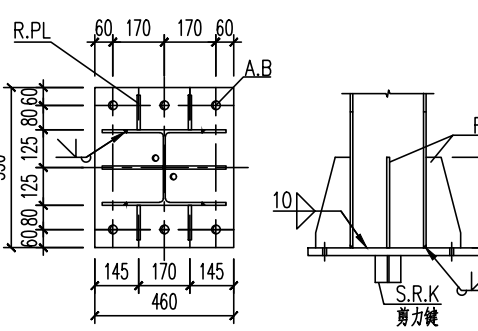
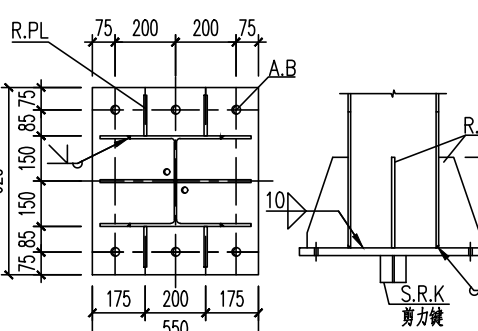
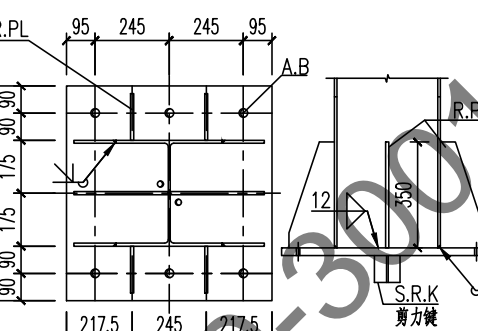
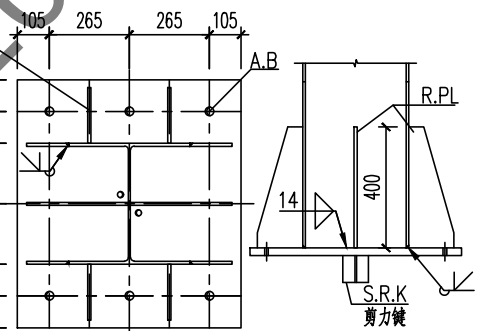
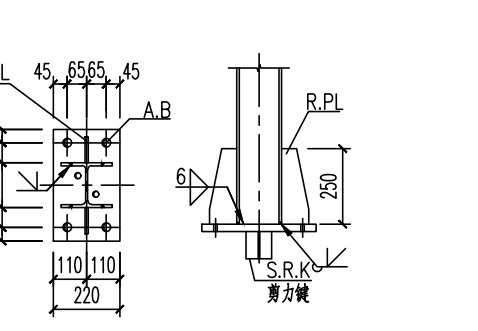
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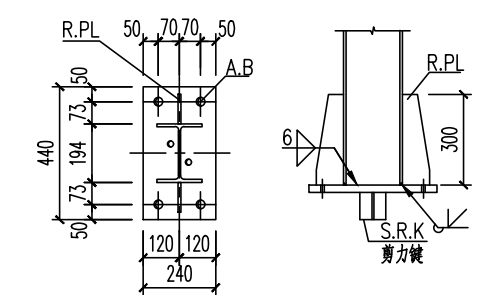
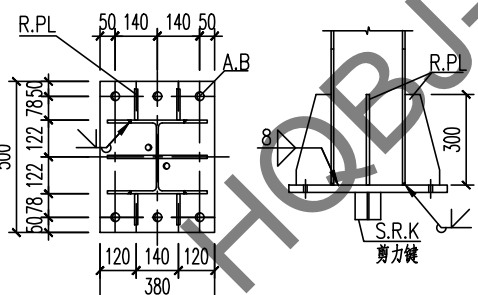
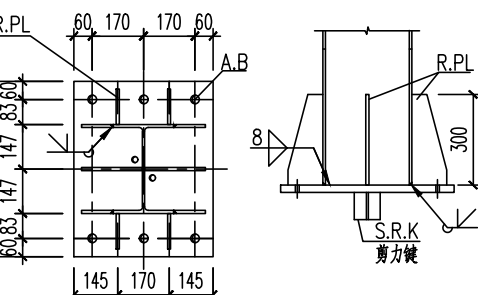
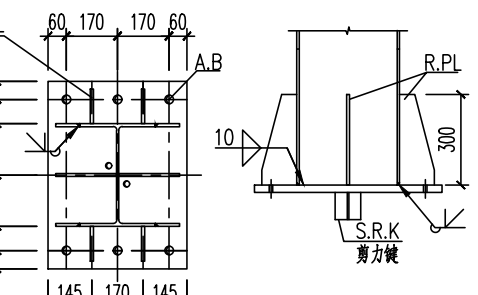
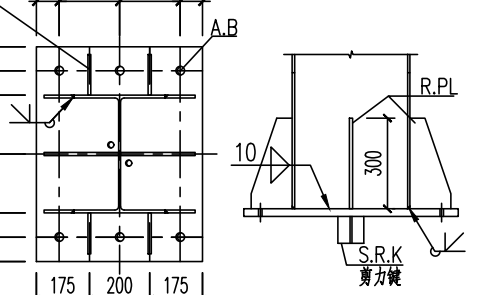


2023	2023-12-30	魏秉奎	易宝生	郑建华
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501 HW100x100x6x8			502 HW125x125x6.5x9			503 HW150x150x7x10			504 HW175x175x7.5x11			505 HW200x200x8x12		
														
A.B	地脚螺栓	4-M20	A.B	地脚螺栓	4-M20	A.B	地脚螺栓	4-M22	A.B	地脚螺栓	4-M24	A.B	地脚螺栓	4-M30
B.PL	柱脚底板	330x210x25	B.PL	柱脚底板	350x210x25	B.PL	柱脚底板	380x240x25	B.PL	柱脚底板	430x280x25	B.PL	柱脚底板	480x320x30
R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	14

506 HW250x250x9x14			507 HW300x300x10x15			508 HW350x350x12x19			509 HW400x400x13x21			511 HM148x100x6x9		
														
A.B	地脚螺栓	6-M30	A.B	地脚螺栓	6-M36	A.B	地脚螺栓	6-M42	A.B	地脚螺栓	6-M48	A.B	地脚螺栓	4-M20
B.PL	柱脚底板	530x460x36	B.PL	柱脚底板	620x550x40	B.PL	柱脚底板	710x680x45	B.PL	柱脚底板	820x740x48	B.PL	柱脚底板	370x220x25
R.PL THK.	加劲肋厚度	14	R.PL THK.	加劲肋厚度	16	R.PL THK.	加劲肋厚度	18	R.PL THK.	加劲肋厚度	20	R.PL THK.	加劲肋厚度	12

512 HM194x150x6x9			513 HM244x175x7x11			514 HM294x200x8x12			515 HM340x250x9x14			516 HM390x300x10x16		
														
A.B	地脚螺栓	4-M24	A.B	地脚螺栓	6-M24	A.B	地脚螺栓	6-M30	A.B	地脚螺栓	6-M30	A.B	地脚螺栓	6-M36
B.PL	柱脚底板	440x240x25	B.PL	柱脚底板	500x380x28	B.PL	柱脚底板	580x460x32	B.PL	柱脚底板	620x460x36	B.PL	柱脚底板	710x550x40
R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	14	R.PL THK.	加劲肋厚度	14	R.PL THK.	加劲肋厚度	16

NOTES 说明:

- TYPE-F (S.R.K-X) INDICATES REQUIREMENT WITH SHEAR-RESISTANT KEY.  
THE SELECTION OF SHEAR-RESISTANT KEY IS DETERMINED BY DESIGNER.  
类型-F (S.R.K-X) 表示柱脚有剪力键, 剪力键的造型由设计师确定。
- TYPE-F INDICATES NO REQUIREMENT WITH SHEAR-RESISTANT KEY.  
类型-F 表示柱脚无剪力键。

3. CUSHION PLATE TYPE & ANCHOR BOLT HOLES OF BASE PLATE SEE PAGE 29.

垫板造型和底板地脚螺栓开孔见第29页。

4. RIB PLATE DETAIL & SHEAR-RESISTANT KEY TYPE SEE PAGE 29.

加劲肋详图及剪力键造型见第29页。

5. ANCHOR BOLT SCHEDULE SEE PAGE 26.

地脚螺栓表见第26页。



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标准图  
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类型-F 柱脚刚接 (1/3)

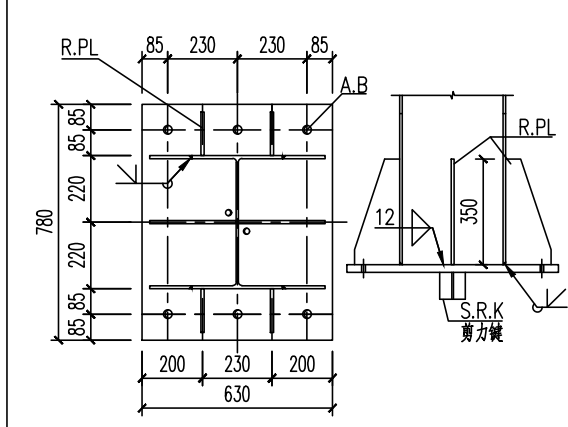
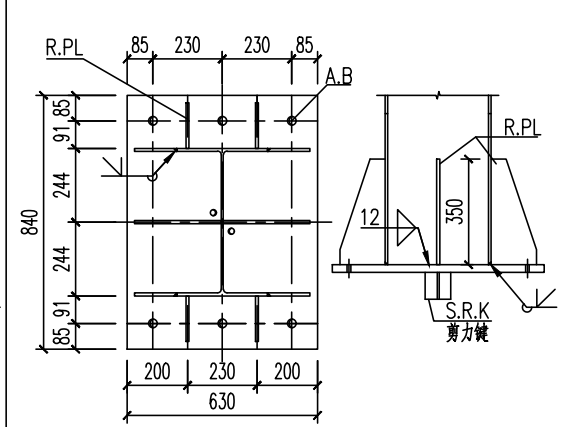
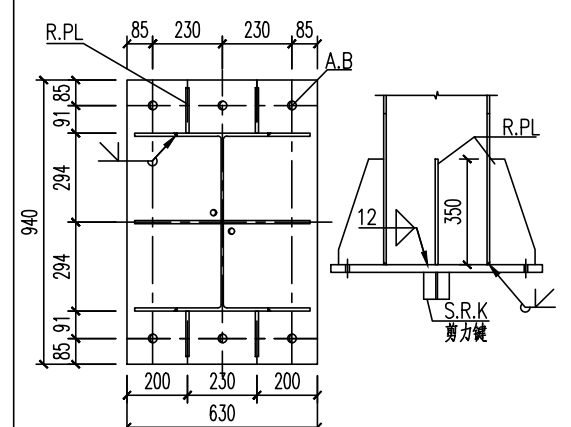
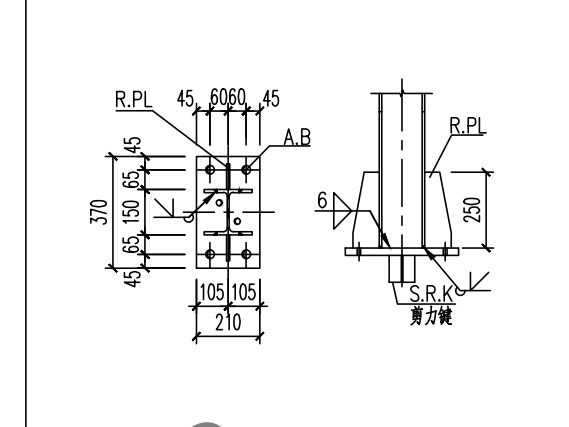
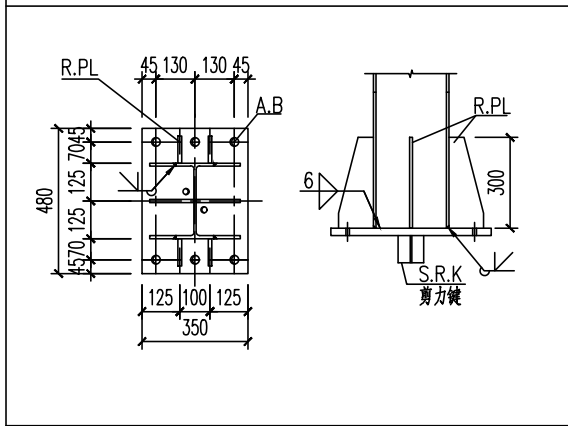
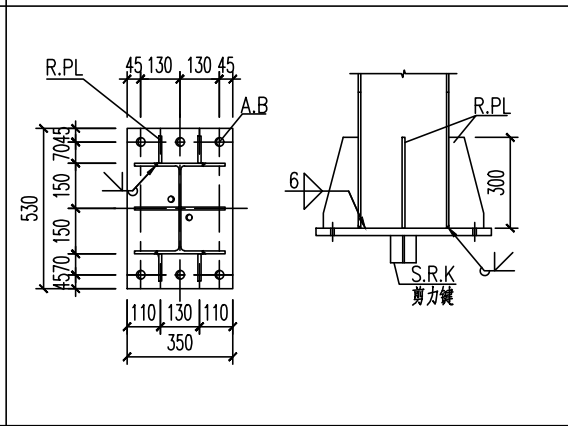
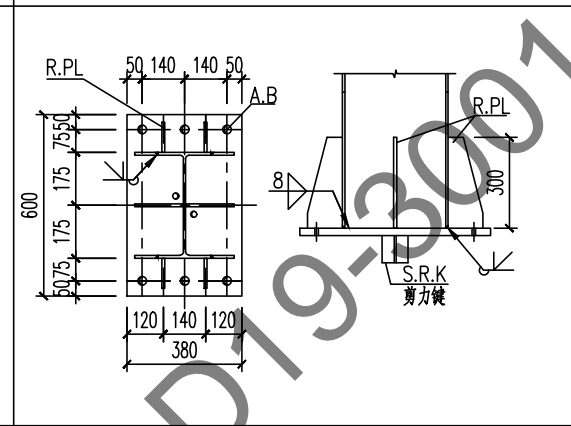
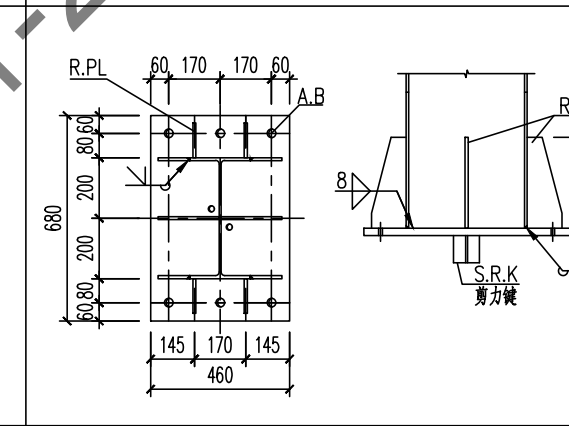
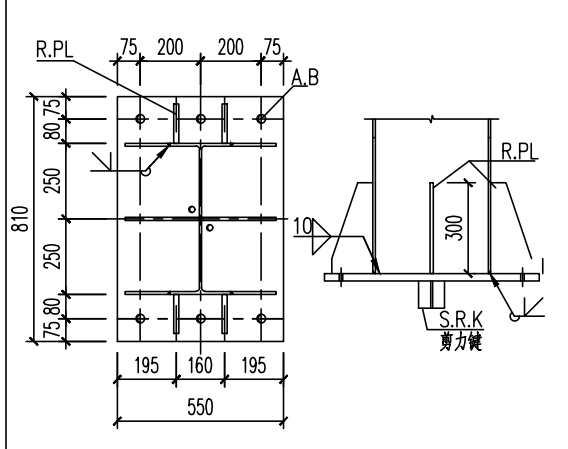
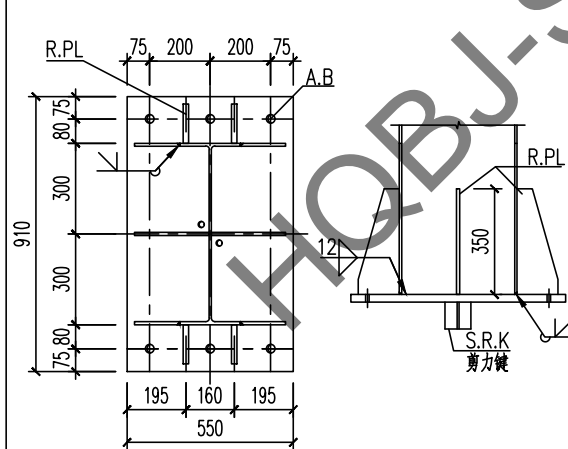
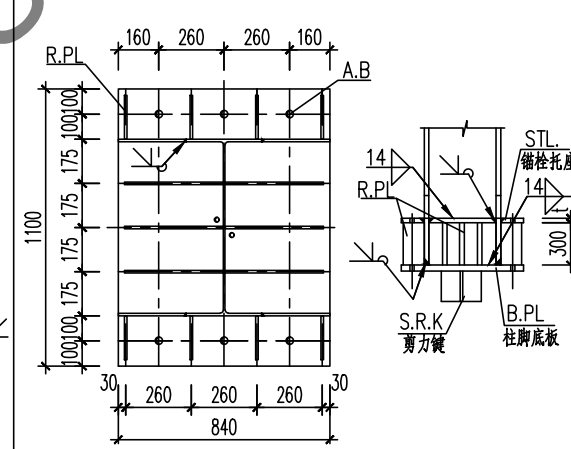
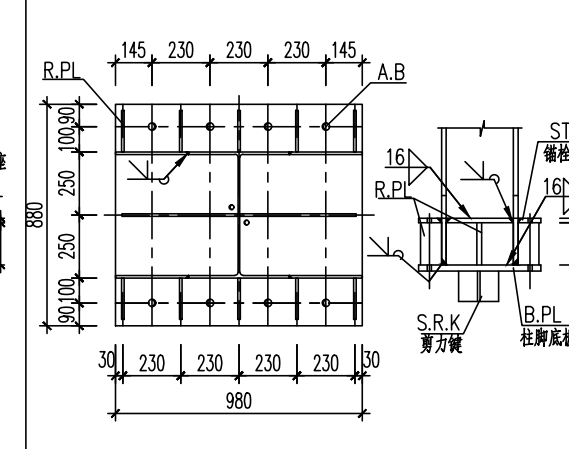
TYPE-F RIGID SUPPORT FOR COLUMN BASES (1/3)

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2023	2023-12-30	魏秉奎	易宝生 姜晨玉	郑建华
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4			3			2			1		
517 HM440x300x11x18			518 HM488x300x11x18			519 HM588x300x12x20			522 HN150x75x5x7		
											
A.B	地脚螺栓	6-M42	A.B	地脚螺栓	6-M42	A.B	地脚螺栓	6-M42	A.B	地脚螺栓	4-M20
B.PL	柱脚底板	780x630x42	B.PL	柱脚底板	840x630x42	B.PL	柱脚底板	940x630x45	B.PL	柱脚底板	370x210x25
R.PL THK.	加劲肋厚度	18	R.PL THK.	加劲肋厚度	18	R.PL THK.	加劲肋厚度	20	R.PL THK.	加劲肋厚度	12
524 HN250x125x6x9			525 HN300x150x6.5x9			526 HN350x175x7x11			527 HN400x200x8x13		
											
A.B	地脚螺栓	6-M22	A.B	地脚螺栓	6-M22	A.B	地脚螺栓	6-M24	A.B	地脚螺栓	6-M30
B.PL	柱脚底板	480x350x25	B.PL	柱脚底板	530x350x30	B.PL	柱脚底板	600x380x30	B.PL	柱脚底板	680x460x36
R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	12	R.PL THK.	加劲肋厚度	14
529 HN500x200x10x16			530 HN600x200x11x17			531 HN700x300x13x24			550 WH500x400x14x25		
											
A.B	地脚螺栓	6-M36	A.B	地脚螺栓	6-M36	A.B	地脚螺栓	6-M48	A.B	地脚螺栓	8-M42
B.PL	柱脚底板	810x550x40	B.PL	柱脚底板	910x550x45	B.PL	柱脚底板	1100x840x42	B.PL	柱脚底板	880x980x42
R.PL THK.	加劲肋厚度	16	R.PL THK.	加劲肋厚度	18	R.PL THK.	加劲肋厚度	20	R.PL THK.	加劲肋厚度	20
						STL. THK.	锚栓托座厚度	36	STL. THK.	锚栓托座厚度	36

NOTES SEE PAGE 27.  
说明见第27页。



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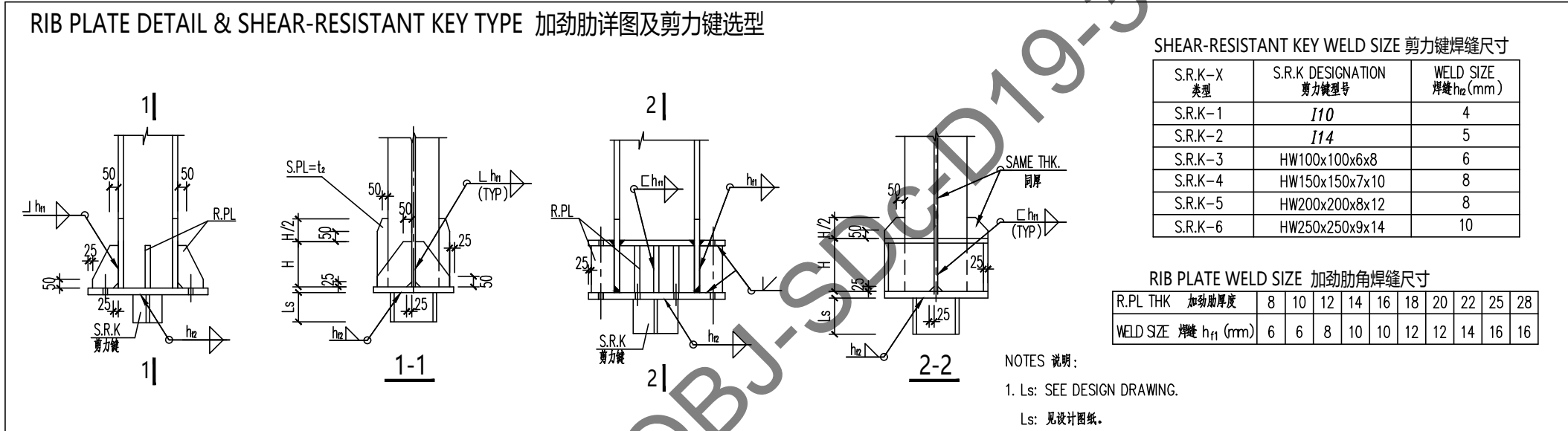
标准图  
STD. DWG.

类型-F 柱脚刚接 (2/3)

TYPE-F RIGID SUPPORT FOR COLUMN BASES (2/3)

HQBJ-SDc-D19-3001-2023

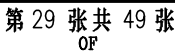
第 28 张 共 49 张  
OF



地脚螺栓表見第26頁。



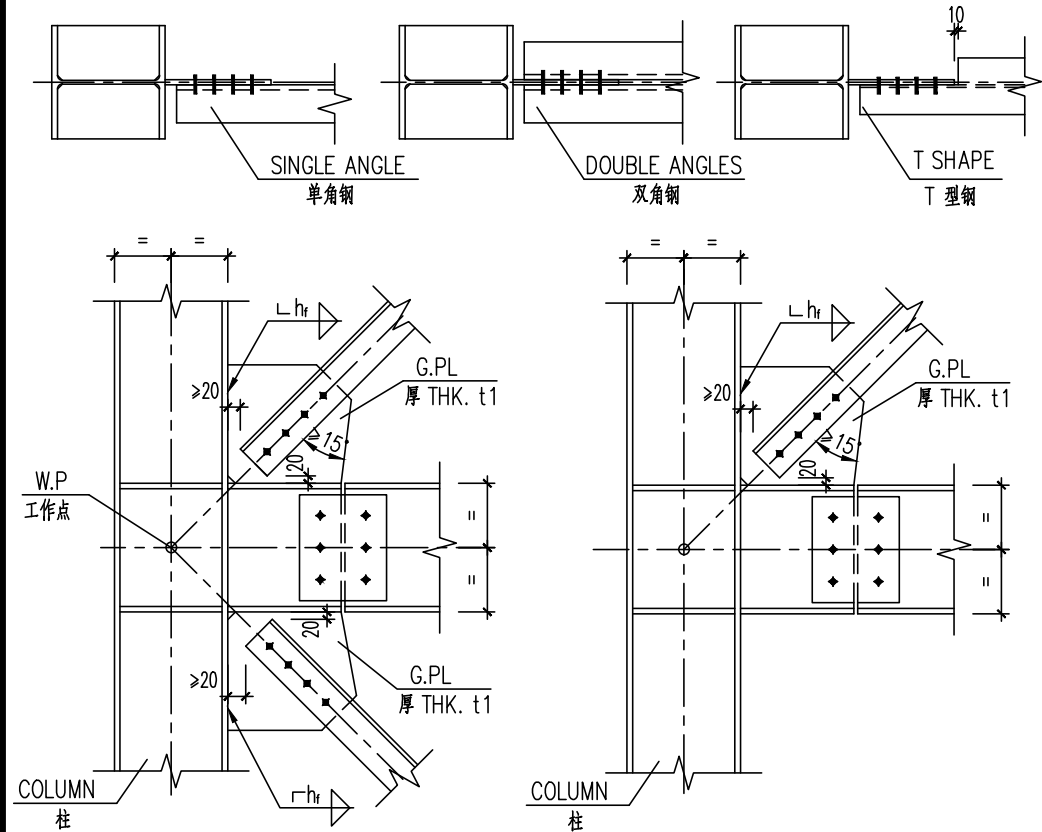
ANCHOR BOLT 地脚螺栓 D (mm)	CUSHION PLATRE SIZE 垫板尺寸 (mm)	DIAMETER OF CUSHION PLATE BOLT HOLE 垫板开孔直径 (mm)	HOLES OF BASE PLATE 柱脚底板开孔 (mm)
M20	60x60x14	22	28
M22	60x60x16	24	30
M24	70x70x18	26	32
M30	80x80x20	32	40
M36	100x100x25	38	46
M42	110x110x28	44	52
M48	120x120x32	50	60
M52	130x130x36	54	64
M56	140x140x40	58	68





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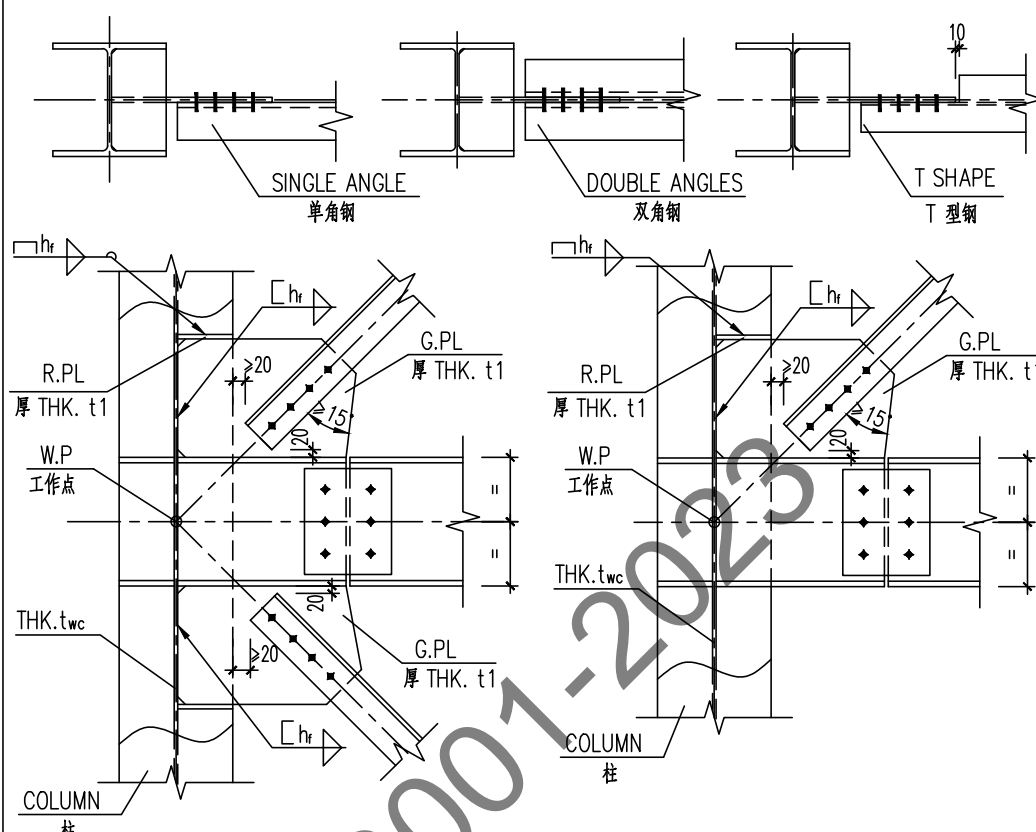
2023	版次 REV	2023-12-30	日期 DATE	秦伟福	设计 DESIGN	易宝生 姜晨玉	校核 CKD	郑建华	审核 DISC APP.
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TYPE-G "1A"

TYPE-G "1B"

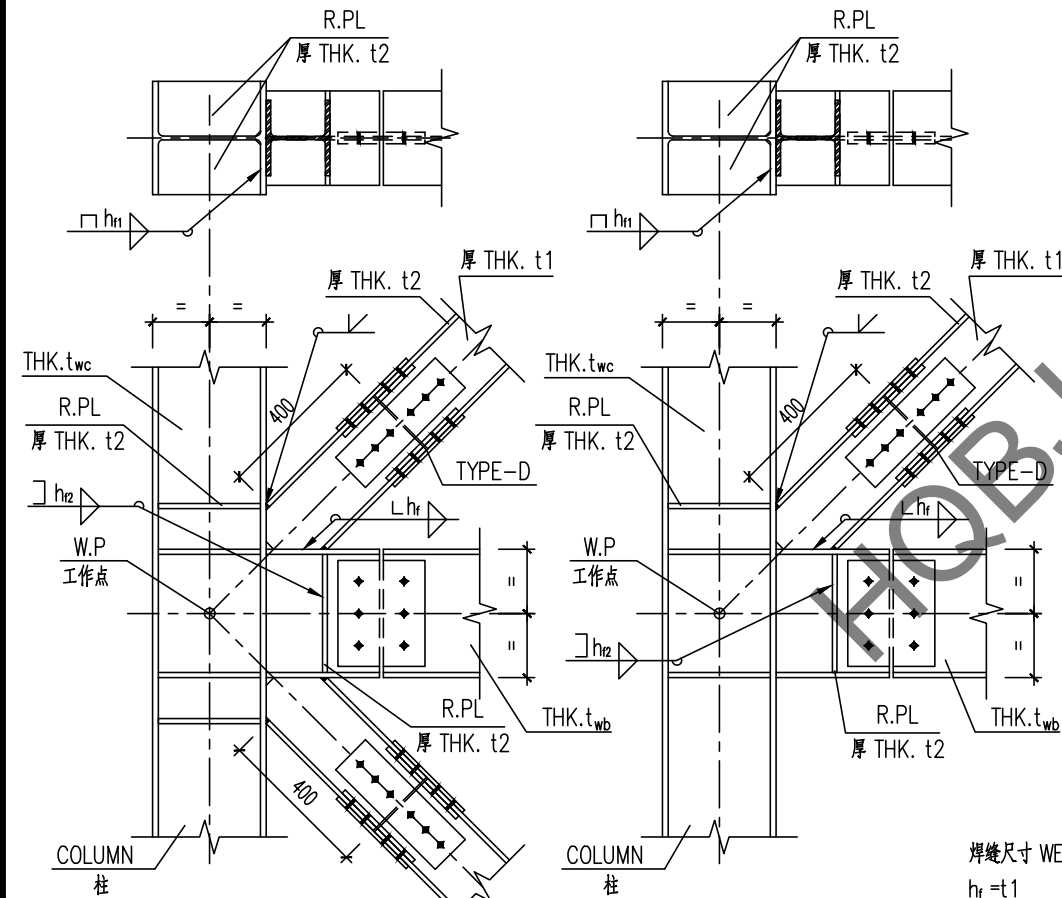
焊缝尺寸 WELD SIZE :  $h_r = t_1$



TYPE-G "2A"

TYPE-G "2B"

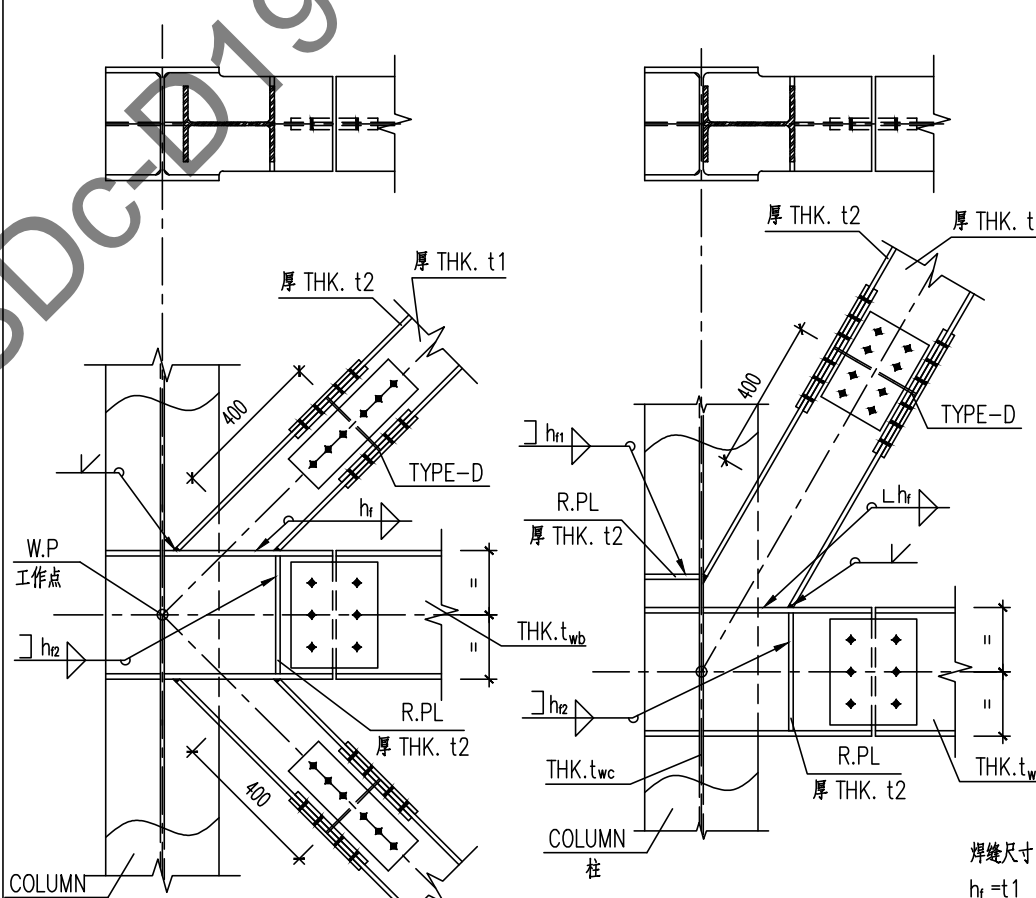
焊缝尺寸 WELD SIZE :  
 $h_r = \min(t_1, t_{wc})$



TYPE-G "3A"

TYPE-G "3B"

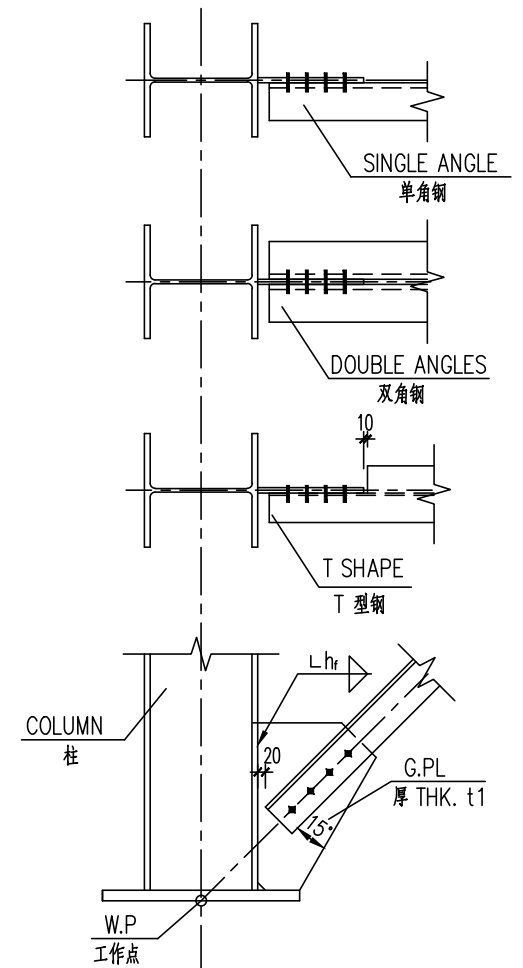
焊缝尺寸 WELD SIZE :  
 $h_r = t_1$   
 $h_{r1} = \min(t_2, t_{wc})$   
 $h_{r2} = \min(t_2, t_{wb})$



TYPE-G "4A"

TYPE-G "4B"

焊缝尺寸 WELD SIZE :  
 $h_r = t_1$   
 $h_{r1} = \min(t_2, t_{wc})$   
 $h_{r2} = \min(t_2, t_{wb})$



TYPE-G "5A"

TYPE-G "5B"

焊缝尺寸 WELD SIZE :  
 $h_r = t_1$   
 $h_{r1} = \min(t_1, t_{wc})$

NOTES: 说明  
1. THE NOTES SEE PAGE 31.  
说明见本套图纸第31页。



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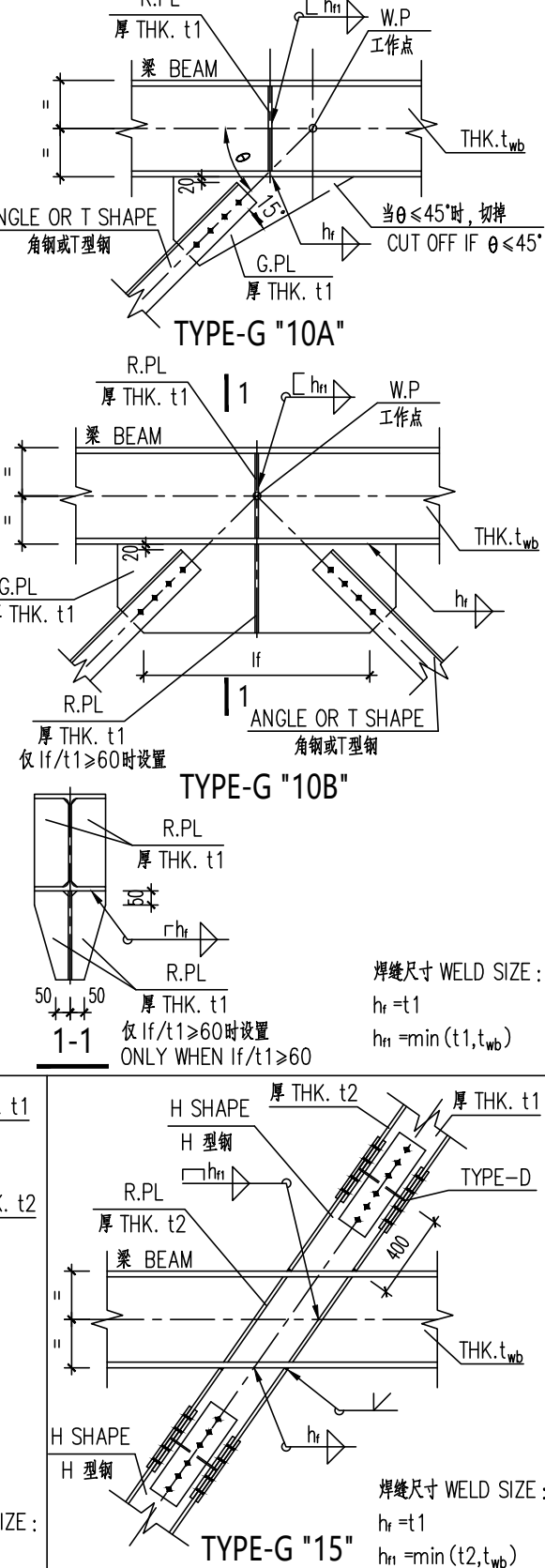
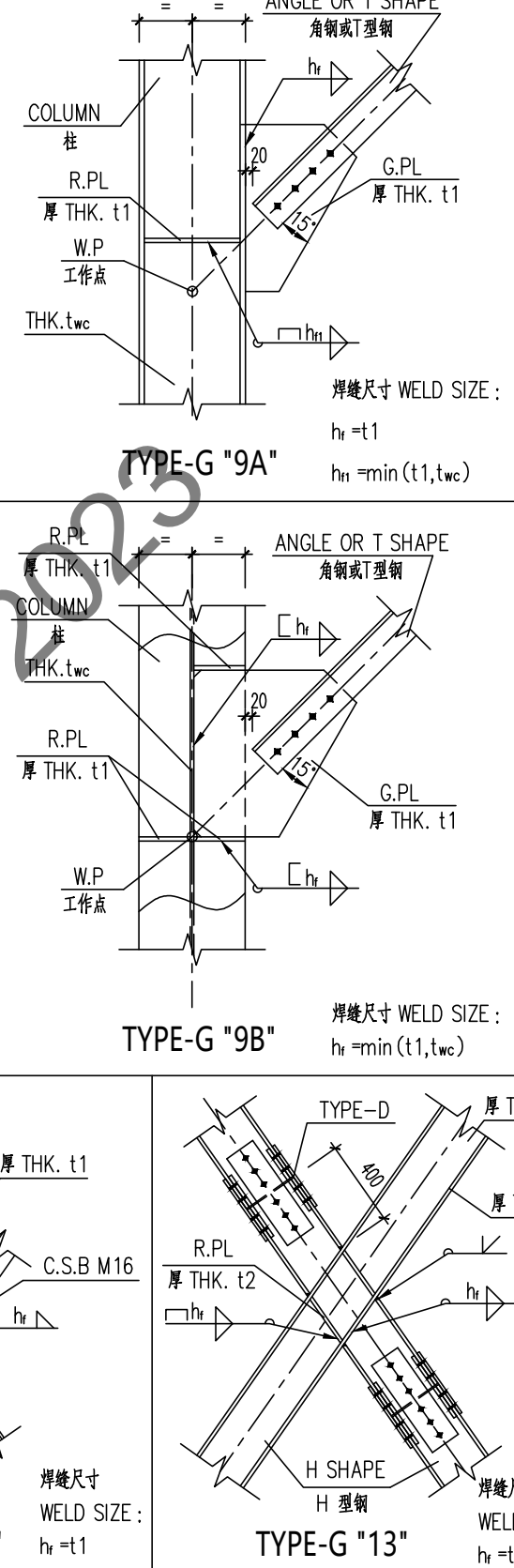
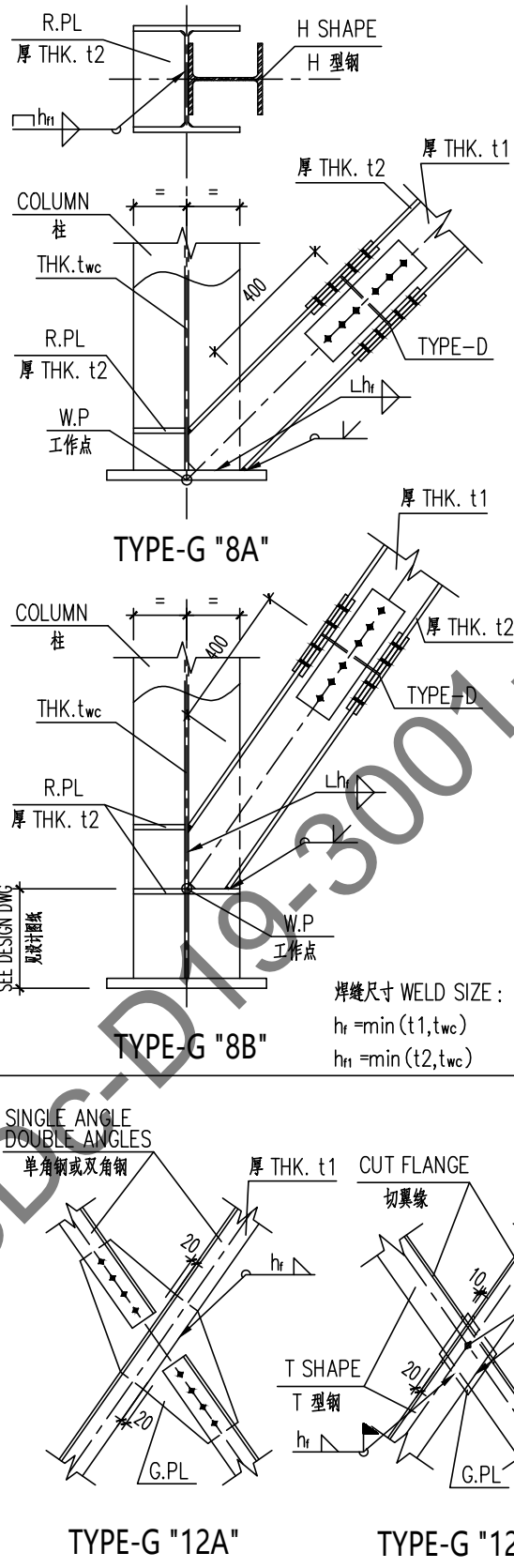
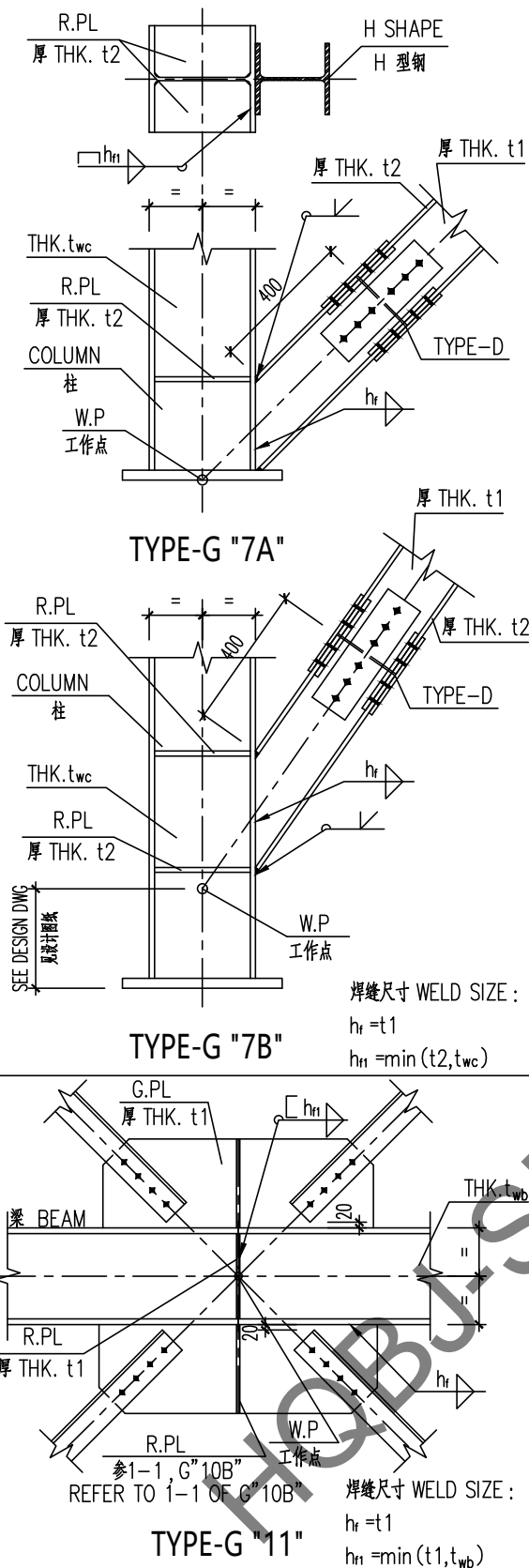
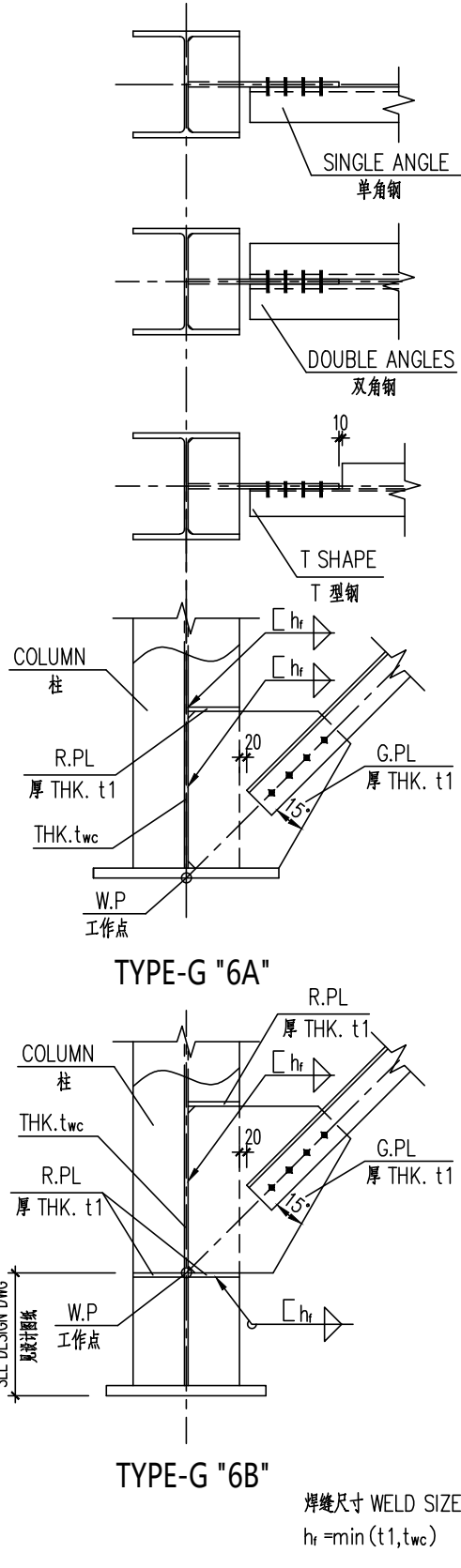
标准图  
STD. DWG.

类型-G 垂直支撑连接 (1/2)  
TYPE-G VERTICAL BRACING CONNECTIONS (1/2)

HQBJ-SDc-D19-3001-2023 第 30 张 共 49 张  
OF



2023	2023-12-30	秦绍福	设计	校核	审核	审批
版次	日期	设计	校核	审核	审批	审批
REV	DATE	DESIGN	CHECK	REVIEW	APPROVE	APPROVE



NOTES: 说明

1. THE SHAPES FOR BRACING SEE DESIGN DRAWING. THE GUSSET PLATE THK. & THE GAUGE OF BOLT HOLES SEE PAGE 33.  
支撑型钢的规格见设计图。连接板厚度和螺栓孔位置见本套图纸第33页。

2. THE FILLER PLATES FOR DOUBLE-ANGLES SEE PAGE 33. 双角钢的连接垫板及定位见本套图纸第33页。

3. IF THE LENGTH OF H SHAPE VERTICAL BRACING IS LESS THEN 2m, SET ONLY ONE SPLICE CONNECTION IN THE MIDDLE OF THE BRACING. 当H型钢垂直支撑构件长度小于2m时，仅在构件中点处做一拼接节点。

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	日期	DATE	DESIGN	CKD	DISC APP.
		易生/姜玉			郑建华
		郑福			

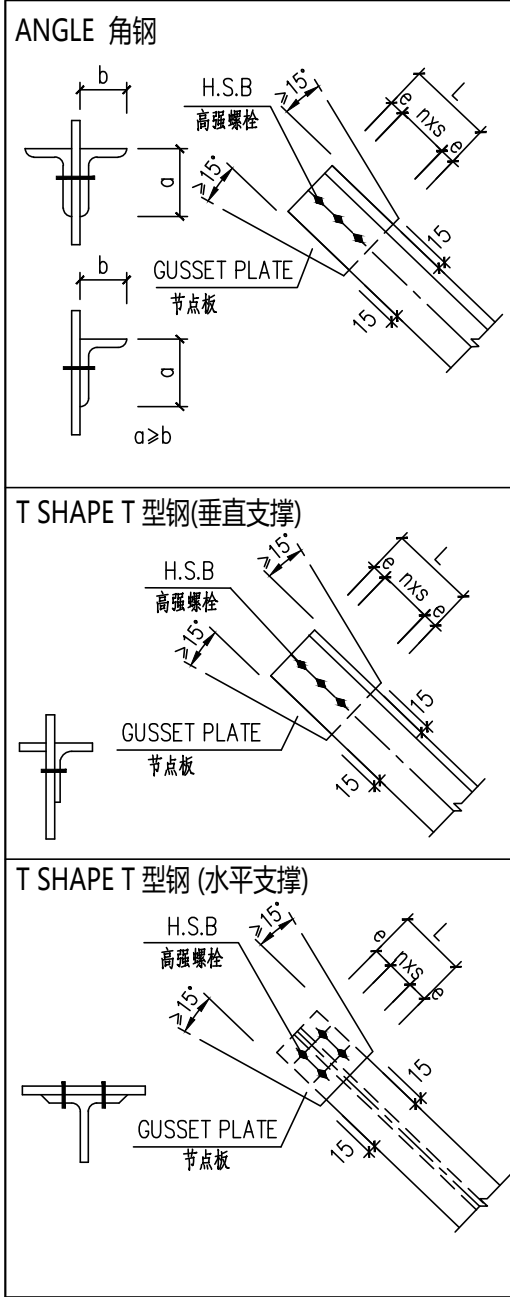
	<b>中国寰球工程有限公司北京分公司</b> CHINA HUANQIU CONTRACTING & ENGINEERING (BEIJING) CO., LTD.		<b>类型-H 水平支撑连接</b> TYPE-H HORIZONTAL BRACING CONNECTIONS	
	工程设计综合资质甲级 COMPREHENSIVE DESIGN LICENSE	证书编号 CERTIFICATE NO. <b>A111001011</b>	标准图 STD. DWG.	HQBJ-SDc-D19-3001-2023



2023	2023-12-30	秦绍福	易宝生	郑建华
版次	日期	设计	校核	审核
REV	DATE	DESIGN	CHECK	DISC APP.

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LIST FOR BRACING CONNECTION 支撑连接名细表



SINGLE ANGLE	单角钢	CODE	MEMBER	G.PL	H.S.B	e	nxs	L
		库号	型号	节点板	高强螺栓			
		95	L63x8	PL-8	2-M16	35	1x60	130
		96	L70x8	PL-8	2-M16	35	1x60	130
		97	L75x8	PL-8	2-M20	45	1x70	160
		98	L80x8	PL-8	3-M20	45	2x70	230
		99	L80x10	PL-10	3-M20	45	2x70	230
		100	L90x8	PL-10	3-M20	45	2x70	230
		101	L90x10	PL-10	4-M20	45	3x70	300
		102	L100x8	PL-10	4-M20	45	3x70	300
		103	L100x10	PL-10	4-M20	45	3x70	300
		104	L110x10	PL-10	4-M24	55	3x80	350
		105	L125x12	PL-12	4-M24	55	3x80	350
		106	L140x12	PL-12	4-M24	55	3x80	350
		107	L160x12	PL-14	2x4-M20	45	3x70	300
		108	L200x16	PL-18	2x4-M24	55	3x80	350
		113	L63x40x6	PL-8	2-M16	35	1x60	130
		114	L70x45x6	PL-8	2-M16	35	1x60	130
		115	L75x50x8	PL-10	2-M20	45	1x70	160
		116	L80x50x8	PL-10	2-M20	45	1x70	160
		117	L90x56x8	PL-10	3-M20	45	2x70	230
		118	L100x63x10	PL-10	3-M20	45	2x70	230
		119	L125x80x10	PL-10	3-M24	55	2x80	270
		120	L140x90x10	PL-10	4-M24	55	3x80	350
		121	L160x100x10	PL-12	2x3-M20	45	2x70	230
		122	L200x125x12	PL-14	2x3-M24	55	2x80	270
		123	L200x125x16	PL-18	2x4-M24	55	3x80	350
		631	TN75x75	PL-8	2-M20	45	1x70	160
		632	TN100x100	PL-8	3-M20	45	2x70	230
		633	TN125x125	PL-8	3-M24	55	2x80	270
		634	TN150x150	PL-10	4-M24	55	3x80	350
		635	TN175x175	PL-10	4-M24	55	3x80	350

DOUBLE ANGLES	双角钢	MEMBER	G.PL	H.S.B	e	nxs	L
		型号	节点板	高强螺栓			
		2L63x8	PL-10	2-M16	35	1x60	130
		2L70x8	PL-12	2-M16	35	1x60	130
		2L75x8	PL-12	2-M20	45	1x70	160
		2L80x8	PL-12	3-M20	45	2x70	230
		2L80x10	PL-14	3-M20	45	2x70	230
		2L90x8	PL-12	3-M20	45	2x70	230
		2L90x10	PL-14	4-M20	45	3x70	300
		2L100x8	PL-12	4-M20	45	3x70	300
		2L100x10	PL-14	4-M20	45	3x70	300
		2L110x10	PL-14	4-M24	55	3x80	350
		2L125x12	PL-16	4-M24	55	3x80	350
		2L140x12	PL-16	4-M24	55	3x80	350
		2L160x12	PL-20	2x4-M20	45	3x70	300
		2L200x16	PL-20	2x4-M24	55	3x80	350
		2L63x40x6	PL-12	2-M16	35	1x60	130
		2L70x45x6	PL-12	2-M16	35	1x60	130
		2L75x50x8	PL-14	2-M20	45	1x70	160
		2L80x50x8	PL-14	2-M20	45	1x70	160
		2L90x56x8	PL-14	3-M20	45	2x70	230
		2L100x63x10	PL-14	3-M20	45	2x70	230
		2L125x80x10	PL-14	3-M24	55	2x80	270
		2L140x90x10	PL-14	4-M24	55	3x80	350
		2L160x100x10	PL-20	2x3-M20	45	2x70	230
		2L200x125x12	PL-20	2x3-M24	55	2x80	270
		2L200x125x16	PL-20	2x4-M24	55	3x80	350
		TN125x125	PL-10	2x2-M16	35	1x60	130
		TN150x150	PL-12	2x2-M20	45	1x70	160
		TN175x175	PL-14	2x2-M24	55	1x80	190

FILLER PLATES 连接垫板尺寸及定位

ANGLE 角钢				
CODE	MEMBER	φ/AXB	PITCH (L≤)	H.S.B
库号	型号	垫板	垫板间隔	高强螺栓
95	2L63x8	φ60	750	1-M16
96	2L70x8	φ60	850	1-M16
97	2L75x8	φ70	900	1-M20
98	2L80x8	φ70	970	1-M20
99	2L80x10	φ70	970	1-M20
100	2L90x8	φ80	1080	1-M20
101	2L90x10	φ80	1080	1-M20
102	2L100x8	φ80	1190	1-M20
103	2L100x10	φ80	1190	1-M20
104	2L110x10	φ90	1330	1-M20
105	2L125x12	φ100	1520	1-M20
106	2L140x12	φ100	1700	1-M20
107	2L160x12	160x80	1960	2-M20
108	2L200x16	200x80	2430	2-M20
113	2L63x40x6	φ60	440	1-M16
114	2L70x45x6	φ60	500	1-M16
115	2L75x50x8	φ70	550	1-M20
116	2L80x50x8	φ70	550	1-M20
117	2L90x56x8	φ80	620	1-M20
118	2L100x63x10	φ80	700	1-M20
119	2L125x80x10	φ100	900	1-M20
120	2L140x90x10	φ100	1000	1-M20
121	2L160x100x10	160x80	1110	2-M20
122	2L200x125x12	200x80	1395	2-M20
123	2L200x125x16	200x80	1395	2-M20

GAUGE OF BOLT HOLES FOR ANGLE & CUT T-SECTION BRACING 角钢、T型钢支撑螺栓开孔位置尺寸

	a OR b	g1	g2		TYPE	φ	c1	c2
	63	35	-		TN75x75	43	40	-
	70	40	-		TN100x100	58	40	-
	75	45	-		TN125x125	66	45	-
	80	45	-		TN150x150	80	45	-
	90	50	-		TN175x175	88	50	-
	100	55	-		TN200x200	100	60	80
	110	60	-					
	125	70	-					
	140	70	-					
	160	60	70					
	200	80	80					

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支撑连接明细表  
LIST FOR BRACING CONNECTION

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证书编号  
CERTIFICATE NO. A110001011

标准图  
STD. DWG.

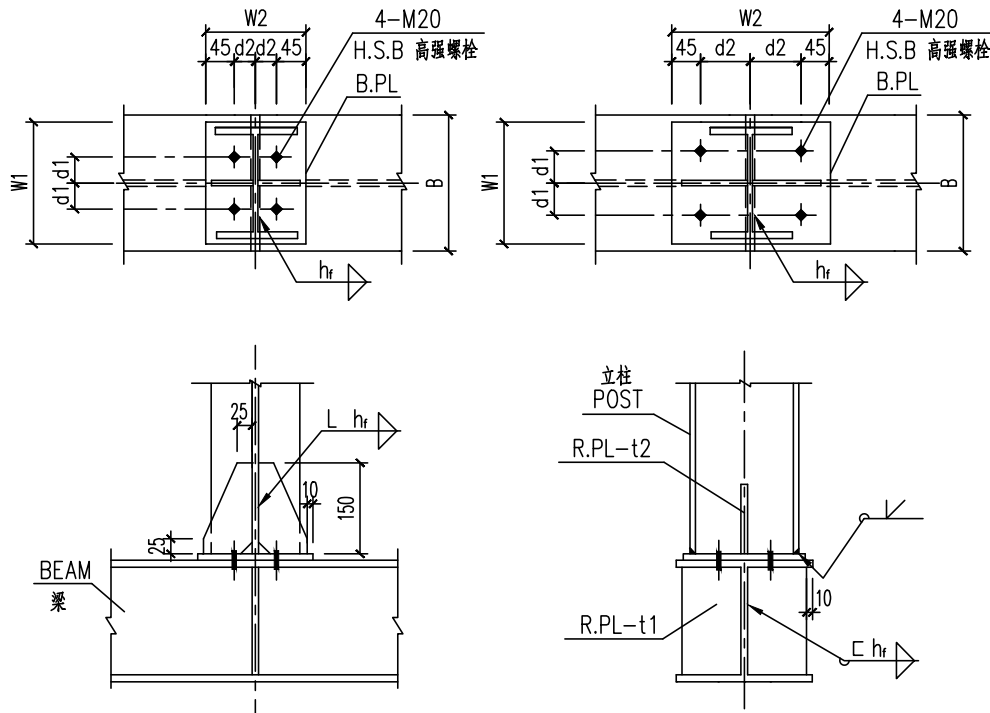
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第 33 张 共 49 张  
OF

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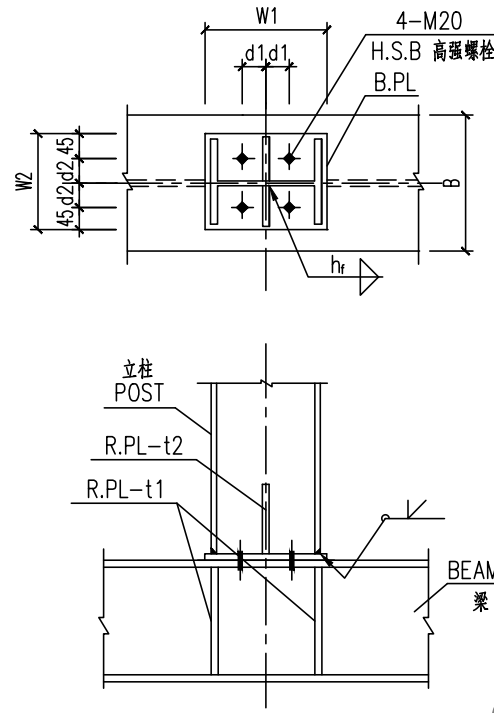
2023-12-30	日期 DATE	审核 DISC APP.
2023	版次 REV	设计 DESIGN
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易生	设计 DESIGN	审核 DISC APP.
易生	设计 DESIGN	审核 DISC APP.
易生	设计 DESIGN	审核 DISC APP.

TYPE - I "1"



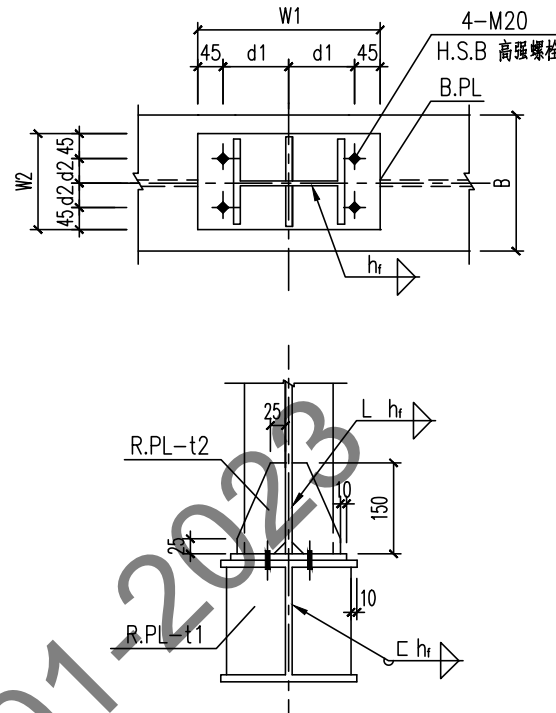
APPLY TO  $W1 \leq B$ , 适用于  $W1 \leq B$

TYPE - I "2A"

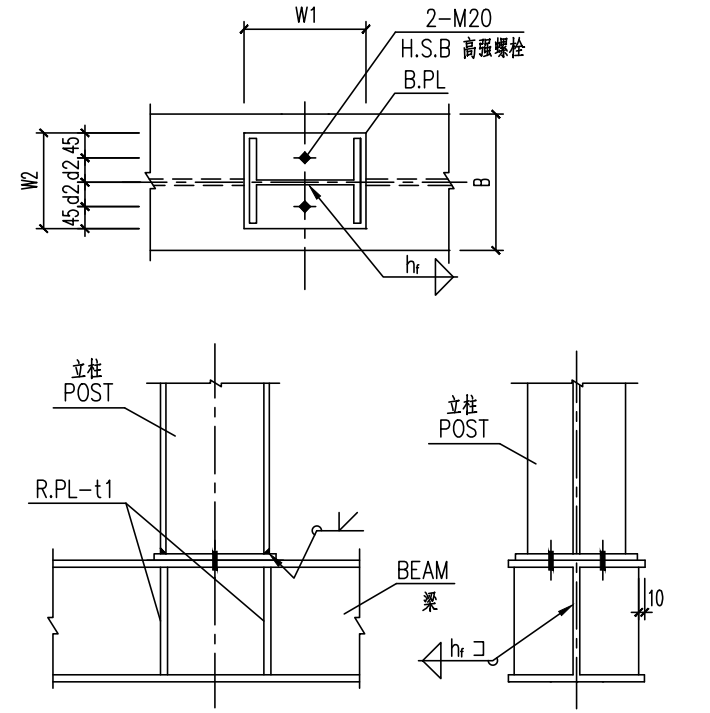


APPLY TO  $W2 \leq B$ , 适用于  $W2 \leq B$

TYPE - I "2B"

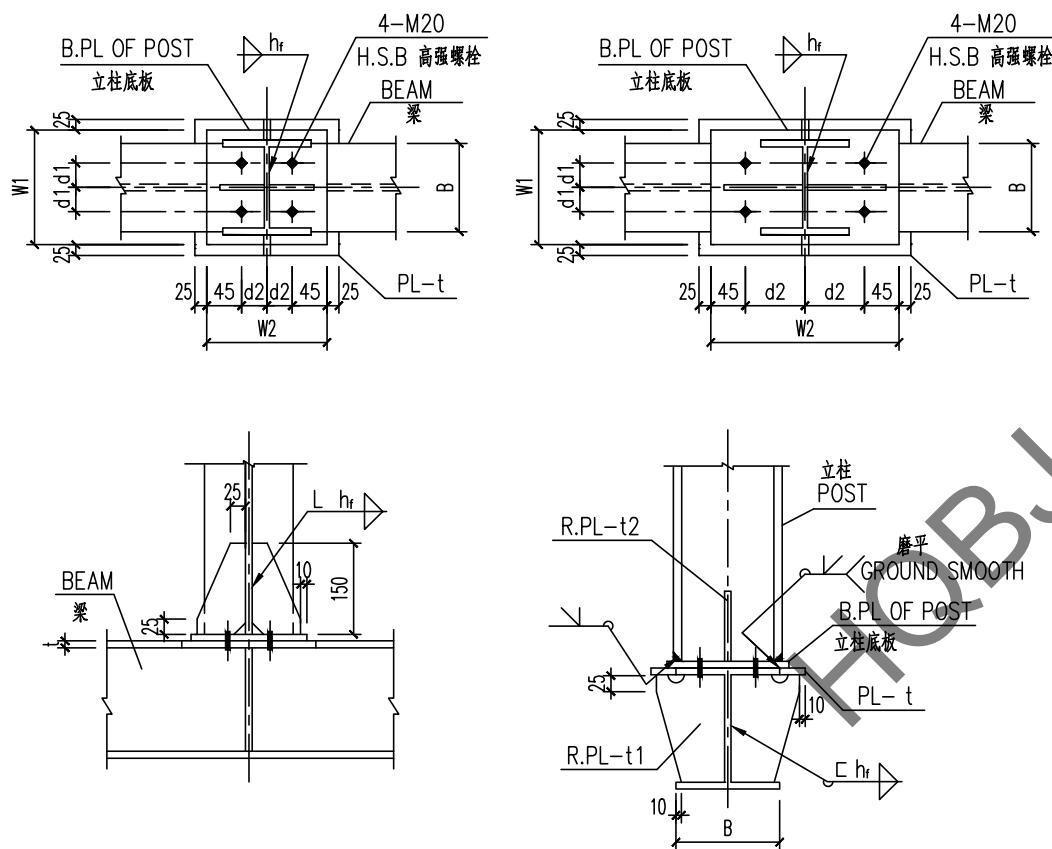


TYPE - I "3"



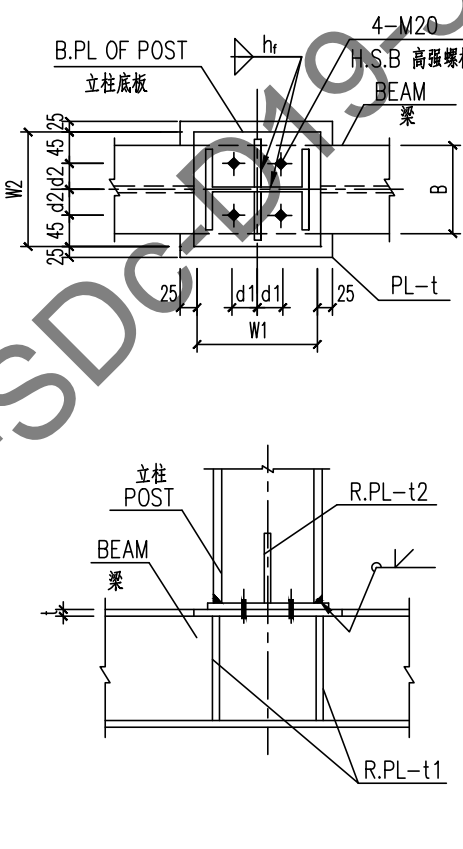
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TYPE - I "4"



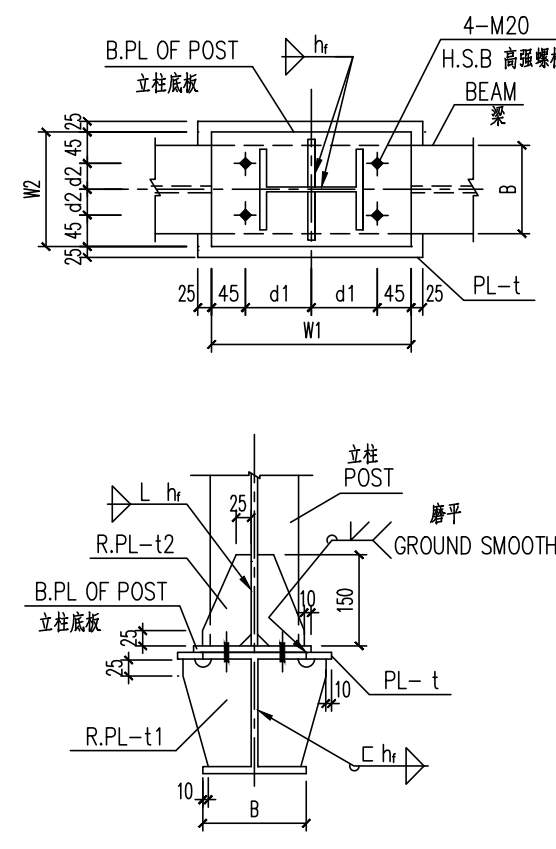
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TYPE - I "5A"

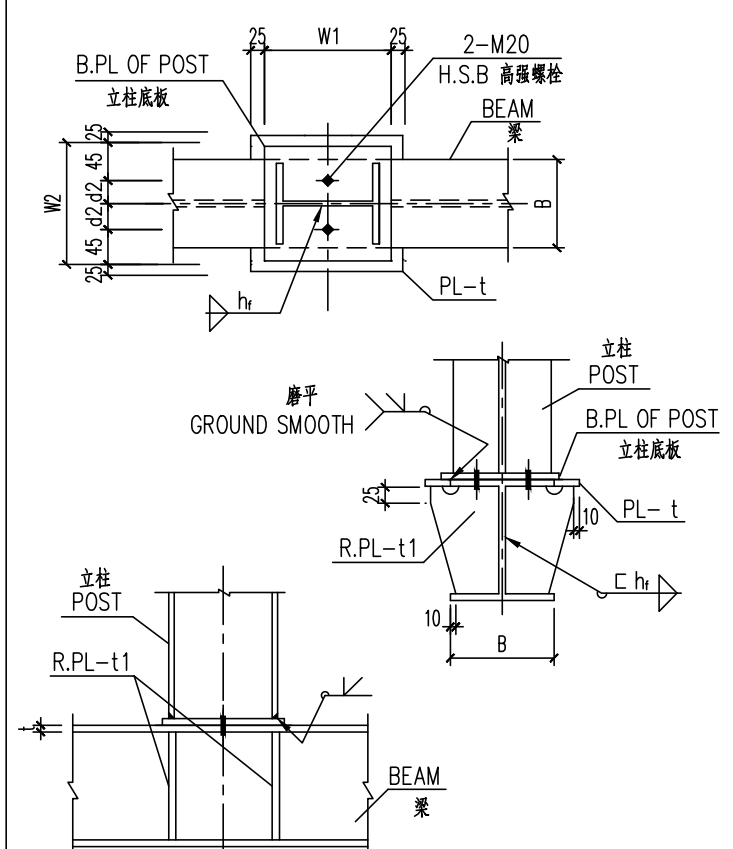


APPLY TO  $W2 \geq B$ , 适用于  $W2 \geq B$

TYPE - I "5B"



TYPE - I "6"



APPLY TO  $W2 \geq B$ , 适用于  $W2 \geq B$

NOTES 说明:

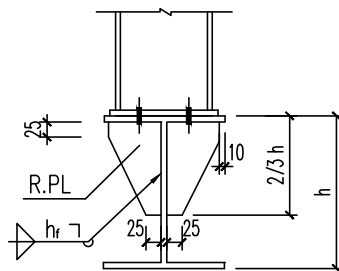
1. PARAMETERS FOR TYPE - I "1"~"6" SEE PAGE 35.

TYPE - I "1"~"6"中各参数详见第35页。

2. IF THE HEIGHT OF BEAM  $h > 300\text{mm}$ , THE FOLLOWING

DETAIL OF RIB PLATES MAY BE APPLIED.

当梁高  $h > 300\text{mm}$ ，可采用下图所示的加肋详图。



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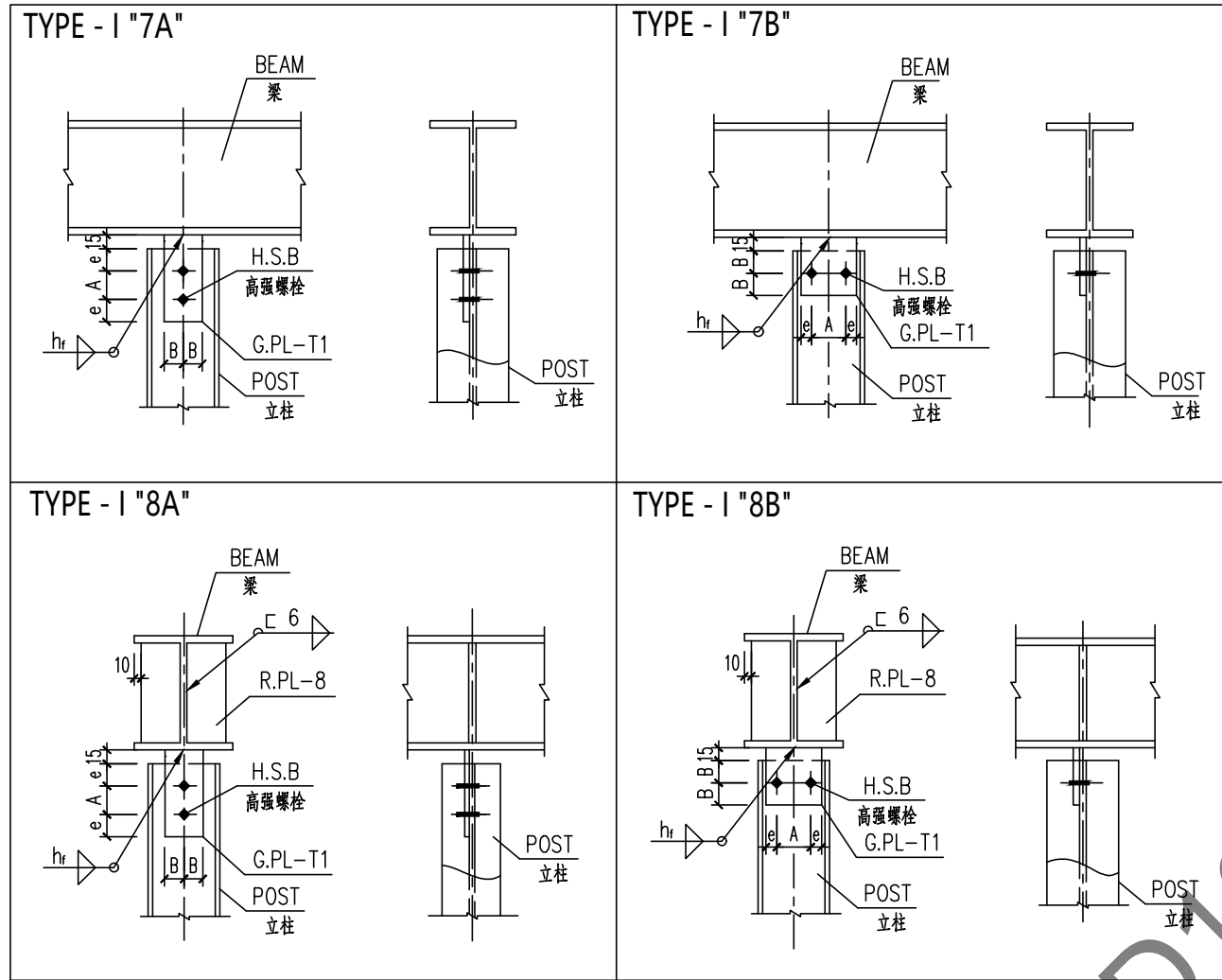
类型-I H-型钢立柱与梁的连接(1/2)

TYPE-I H-SHAPE POST TO BEAM CONNECTIONS (1/2)



2023	2023-12-30	设计	校核	审核
版次	日期	设计	校核	审核
REV	DATE	DESIGN	CHECK	DISC APP.
		曹力慧	易生	郑建华

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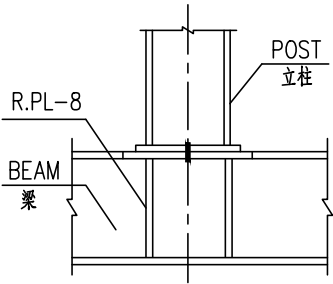
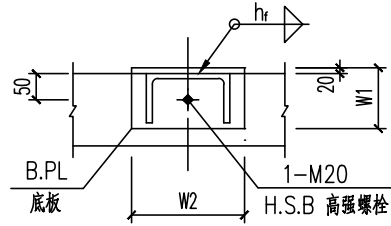
APPLY TO TYPE-I"7A、7B、8A、8B"								
仅用于 TYPE-I"7A、7B、8A、8B"								
CODE 库号	POST SIZE 立柱型号	TYPE 选型	A (mm)	B (mm)	e (mm)	G.PL T1 节点板厚	H.S.B 高强螺栓	hr 焊缝
501	HW100x100x6x8	TYPE-I"7A,8A"	60	30	35	10	2-M16	8
502	HW125x125x6.5x9	TYPE-I"7A,8A"	60	40	35	12	2-M16	10
503	HW150x150x7x10	TYPE-I"7A,8A"	70	50	45	12	2-M20	10
504	HW175x175x7.5x11	TYPE-I"7A,8A"	70	62.5	45	12	2-M20	10
505	HW200x200x8x12	TYPE-I"7A,8A"	70	70	45	12	2-M20	10
506	HW250x250x9x14	TYPE-I"7B,8B"	90	45	45	14	2-M20	12
511	HM148x100x6x9	TYPE-I"7A,8A"	70	50	45	10	2-M20	8
512	HM194x150x6x9	TYPE-I"7A,8A"	70	70	45	12	2-M20	8
513	HM244x175x7x11	TYPE-I"7B,8B"	90	45	45	12	2-M20	10
514	HM294x200x8x12	TYPE-I"7B,8B"	2X70	45	45	12	3-M20	10
522	HN150x75x5x7	TYPE-I"7A,8A"	70	50	45	10	2-M20	8
523	HN200x100x5.5x8	TYPE-I"7A,8A"	70	70	45	12	2-M20	8
524	HN250x125x6x9	TYPE-I"7B,8B"	90	45	45	12	2-M20	8
525	HN300x150x6.5x9	TYPE-I"7B,8B"	2X70	45	45	12	3-M20	8

APPLY TO TYPE-I"1、2A、2B、3、4、5A、5B、6"									
仅用于 TYPE-I"1、2A、2B、3、4、5A、5B、6"									
CODE 库号	POST SIZE 立柱型号	TYPE 选型	B.PL THK x W1 x W2 柱脚底板	d 1 (mm)	d 2 (mm)	R.PL-t1 加劲板	R.PL-t2 加劲板	hr 焊缝	H.S.B 高强螺栓
501	HW100x100x6x8	TYPE-I"1,4"	-16x200x250	55	80	PL-8		6	4-M20
		TYPE-I"2B,5B"	-16x250x200	80	55	PL-8		6	4-M20
		TYPE-I"3,6"	-16x150x200		55	PL-8		6	2-M20
502	HW125x125x6.5x9	TYPE-I"1,4"	-16x200x280	55	95	PL-8		6	4-M20
		TYPE-I"2B,5B"	-16x280x200	95	55	PL-8		6	4-M20
		TYPE-I"3,6"	-16x180x200		55	PL-8		6	2-M20
503	HW150x150x7x10	TYPE-I"1,4"	-16x200x300	55	105	PL-10		8	4-M20
		TYPE-I"2B,5B"	-16x300x200	105	55	PL-10		8	4-M20
		TYPE-I"3,6"	-16x200x200		55	PL-10		8	2-M20
504	HW175x175x7.5x11	TYPE-I"1,4"	-16x230x330	70	120	PL-10		8	4-M20
		TYPE-I"2B,5B"	-16x330x230	120	70	PL-10		8	4-M20
		TYPE-I"3,6"	-16x230x230		70	PL-10		8	2-M20
505	HW200x200x8x12	TYPE-I"1,4"	-16x250x350	80	130	PL-12		8	4-M20
		TYPE-I"2B,5B"	-16x350x250	130	80	PL-12		8	4-M20
		TYPE-I"3,6"	-16x250x250		80	PL-12		8	2-M20
506	HW250x250x9x14	TYPE-I"1,2A,4,5A"	-16x300x300	60	105	PL-12	PL-12	8	4-M20
		TYPE-I"3,6"	-16x300x300		105	PL-12		8	2-M20
511	HM148x100x6x9	TYPE-I"1,4"	-16x200x250	55	80	PL-8		6	4-M20
		TYPE-I"2B,5B"	-16x300x200	105	55	PL-8		6	4-M20
		TYPE-I"3,6"	-16x200x200		55	PL-8		6	2-M20
512	HM194x150x6x9	TYPE-I"1,4"	-16x250x300	55	105	PL-10		6	4-M20
		TYPE-I"2B,5B"	-16x350x200	130	55	PL-10		6	4-M20
		TYPE-I"3,6"	-16x250x200		55	PL-10		6	2-M20
513	HM244x175x7x11	TYPE-I"1,2A,4,5A"	-16x300x230	60	70	PL-12	PL-12	8	4-M20
		TYPE-I"3,6"	-16x300x230		70	PL-12		8	2-M20
514	HM294x200x8x12	TYPE-I"1,2A,4,5A"	-16x350x250	70	80	PL-12	PL-12	8	4-M20
		TYPE-I"3,6"	-16x350x250		80	PL-12		8	2-M20
522	HN150x75x5x7	TYPE-I"1,4"	-16x200x230	55	70	PL-8		6	4-M20
		TYPE-I"2B,5B"	-16x300x200	105	55	PL-8		6	4-M20
		TYPE-I"3,6"	-16x200x200		55	PL-8		6	2-M20
523	HN200x100x5.5x8	TYPE-I"1,4"	-16x250x250	80	80	PL-8		6	4-M20
		TYPE-I"2B,5B"	-16x350x200	130	55	PL-8		6	4-M20
		TYPE-I"3,6"	-16x250x200		55	PL-8		6	2-M20
524	HN250x125x6x9	TYPE-I"1,2A,4,5A"	-16x300x200	60	55	PL-10	PL-10	6	4-M20
		TYPE-I"3,6"	-16x300x200		55	PL-10		6	2-M20
525	HN300x150x6.5x9	TYPE-I"1,2A,4,5A"	-16x350x200	70	55	PL-10	PL-10	6	4-M20
		TYPE-I"3,6"	-16x350x200		55	PL-10		6	2-M20

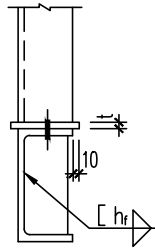
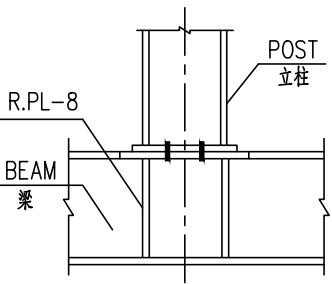
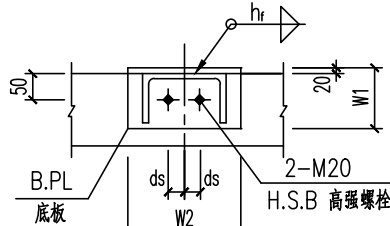
2023	2023-12-30	设计	审核	审批
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REV	DATE	DESIGN	CHECK	DISC APP.
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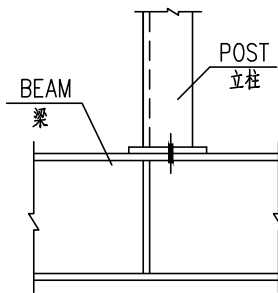
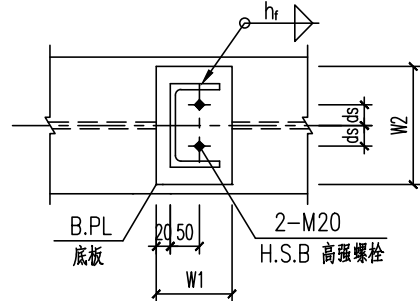
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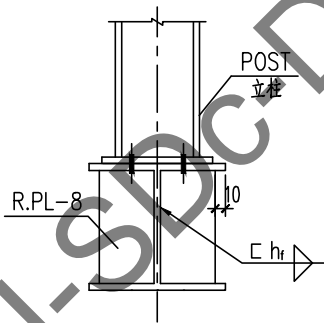
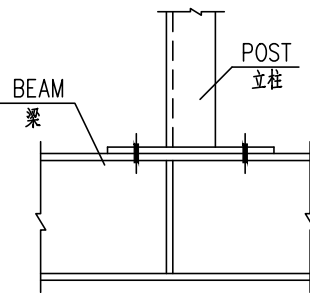
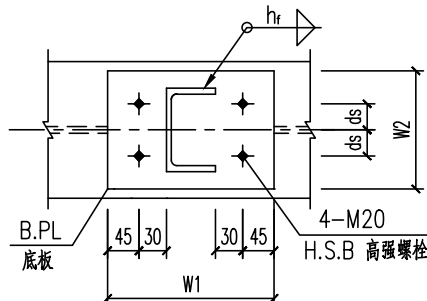
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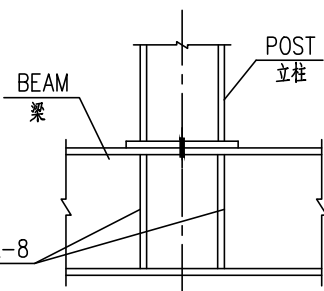
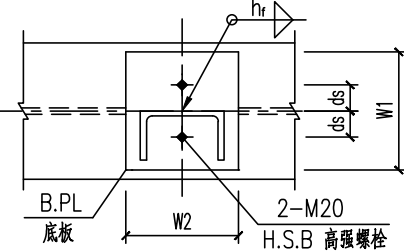
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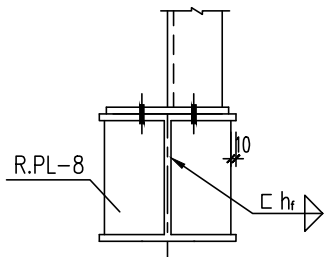
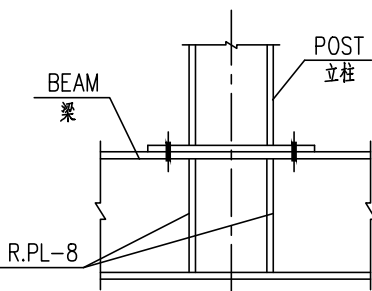
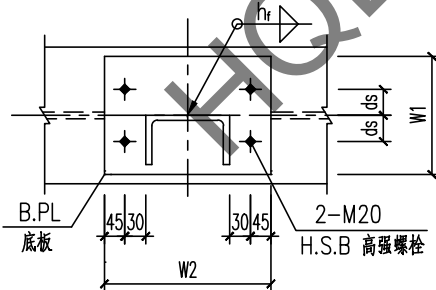
TYPE - J "2B"



TYPE - J "3A"



TYPE - J "3B"



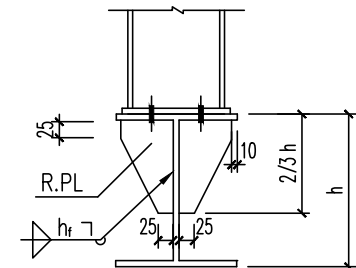
APPLY TO TYPE-J"1A, 1B, 2A, 2B, 3A, 3B"  
仅用于 TYPE-J"1A, 1B, 2A, 2B, 3A, 3B"

CODE 库号	POST SIZE 立柱型号	TYPE 选型	B.PL THK x W1 x W2 柱脚底板	ds (mm)	hr 焊缝	H.S.B 高强螺栓
571	[ 8	TYPE-J"1A"	-16x120x130		6	1-M20
		TYPE-J"2B"	-16x190x190	50	6	4-M20
		TYPE-J"3A"	-16x190x130	50	6	2-M20
		TYPE-J"3B"	-16x190x230	50	6	4-M20
572	[10	TYPE-J"1A"	-16x120x150		6	1-M20
		TYPE-J"2B"	-16x190x190	50	6	4-M20
		TYPE-J"3A"	-16x190x150	50	6	2-M20
		TYPE-J"3B"	-16x190x250	50	6	4-M20
573	[12.6	TYPE-J"1A"	-16x120x180		6	1-M20
		TYPE-J"2B"	-16x200x190	50	6	4-M20
		TYPE-J"3A"	-16x190x180	50	6	2-M20
		TYPE-J"3B"	-16x190x280	50	6	4-M20
574	[14a	TYPE-J"1A"	-16x120x190		6	1-M20
		TYPE-J"2B"	-16x210x190	50	6	4-M20
		TYPE-J"3A"	-16x190x190	50	6	2-M20
		TYPE-J"3B"	-16x190x290	50	6	4-M20
575	[16a	TYPE-J"1B"	-16x120x210	35	6	2-M20
		TYPE-J"2B"	-16x210x210	50	6	4-M20
		TYPE-J"3A"	-16x190x210	50	6	2-M20
		TYPE-J"3B"	-16x190x310	50	6	4-M20
576	[18a	TYPE-J"1B"	-16x120x230	35	8	2-M20
		TYPE-J"2A"	-16x120x230	50	8	2-M20
		TYPE-J"3A"	-16x190x230	50	8	2-M20
		TYPE-J"3B"	-16x190x330	50	8	4-M20
577	[20a	TYPE-J"1B"	-16x120x250	35	8	2-M20
		TYPE-J"2A"	-16x120x250	50	8	2-M20
		TYPE-J"3A"	-16x190x250	50	8	2-M20
		TYPE-J"3B"	-16x190x350	50	8	4-M20

NOTES 说明:

1. IF THE HEIGHT OF BEAM  $h > 300\text{mm}$ , THE FOLLOWING  
DETAIL OF RIB PLATES MAY BE APPLIED.

当梁高  $h > 300\text{mm}$ ，可采用如图所示的加肋详图。



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标准图  
STD. DWG.

类型-J 槽钢立柱与梁的连接(1/2)  
TYPE-J CHANNEL STEEL POST TO BEAM CONNECTIONS (1/2)

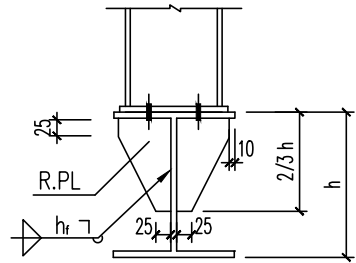
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2023-12-30	日期 DATE	审核 DISC APP.
2023	版次 REV	设计 DESIGN
曹力慧	设计 DESIGN	校核 CKD
曹力慧	校核 CKD	审核 DISC APP.
曹力慧	校核 CKD	审核 DISC APP.

APPLY TO TYPE-J "4A、4B、5A、5B、6A、6B、7A、7B" 仅用于 TYPE-J"4A、4B、5A、5B、6A、6B、7A、7B"							
CODE 库号	POST SIZE 立柱型号	TYPE 选型	A (mm)	e (mm)	G.PL-T1 节点板厚	H.S.B 高强螺栓	h <sub>r</sub> 焊缝
571	[ 8	TYPE-J"4A,5A,6A,7A"	60	35	8	2-M16	6
572	[10	TYPE-J"4A,5A,6A,7A"	60	35	8	2-M16	6
573	[12.6	TYPE-J"4A,5A,6A,7A"	60	35	8	2-M16	6
574	[14a	TYPE-J"4A,5A,6A,7A"	60	35	8	2-M16	6
575	[16a	TYPE-J"4A,5A,6A,7A"	70	45	10	2-M20	8
576	[18a	TYPE-J"4A,5A,6A,7A"	70	45	10	2-M20	8
577	[20a	TYPE-J"4B,5B,6B,7B"	65	45	10	2-M20	8

NOTES: 说明  
IF THE HEIGHT OF BEAM  $h > 300\text{mm}$ , THE FOLLOWING  
DETAIL OF RIB PLATES MAY BE APPLIED.  
当梁高 $h > 300\text{mm}$ 时,可采用下图所示的加肋详图.



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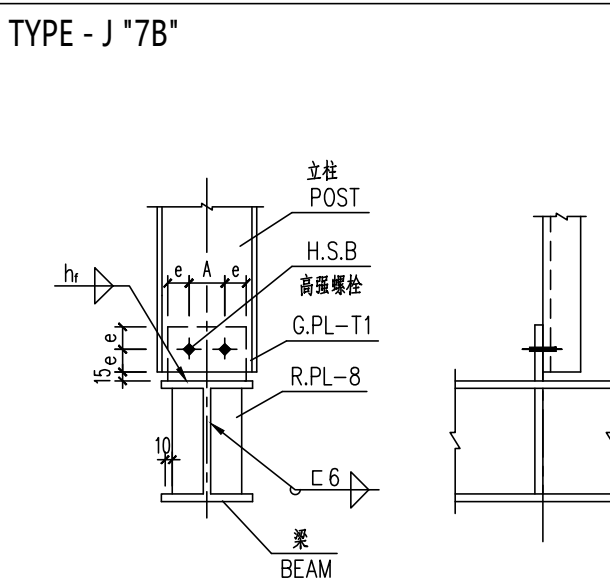
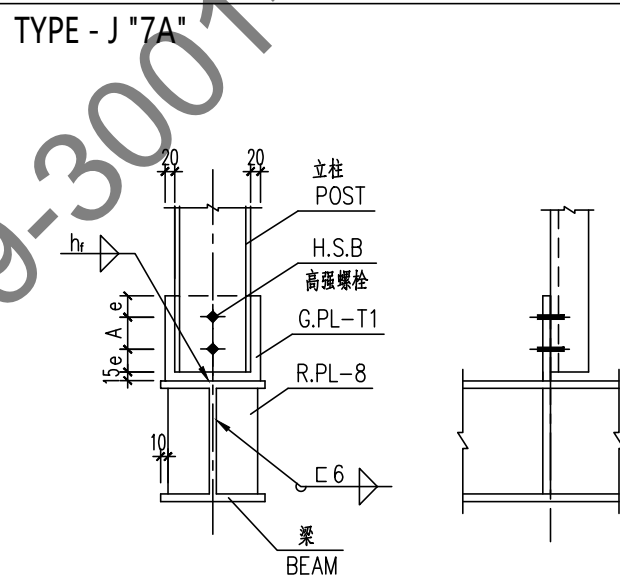
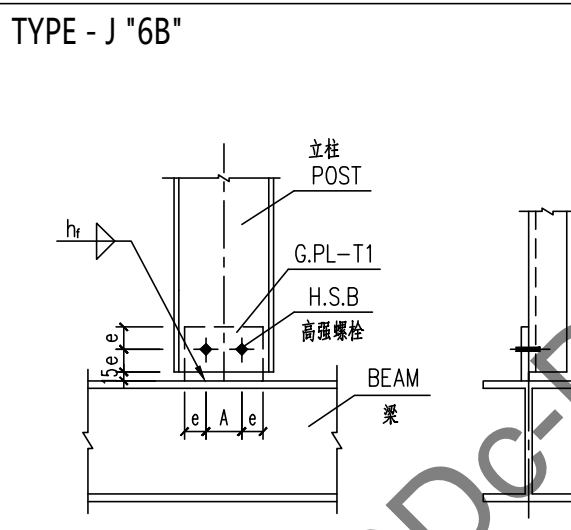
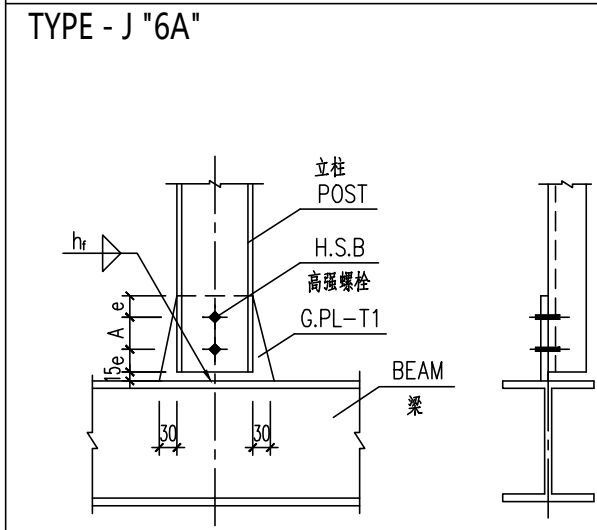
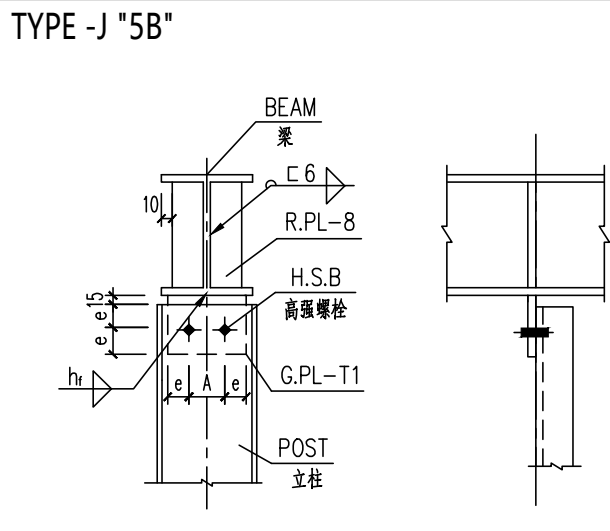
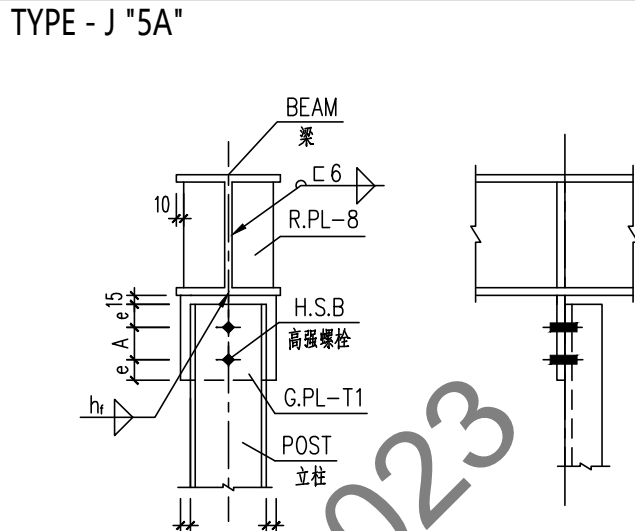
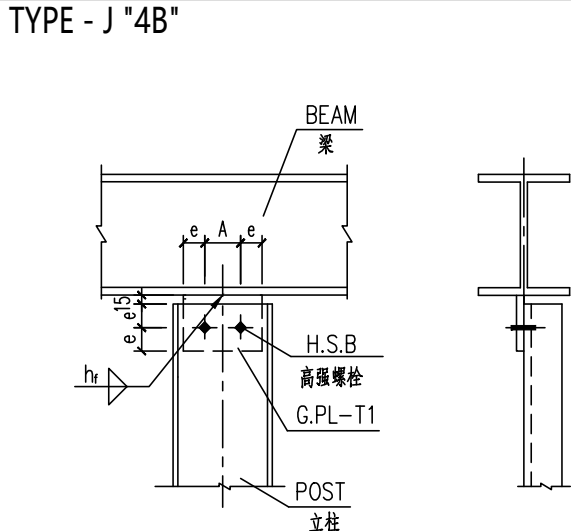
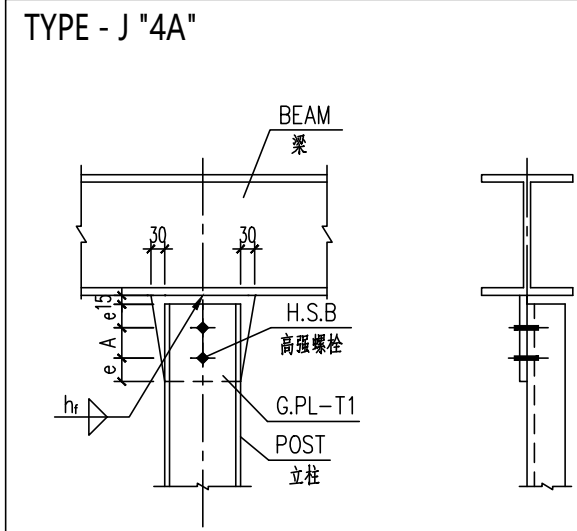
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标准图  
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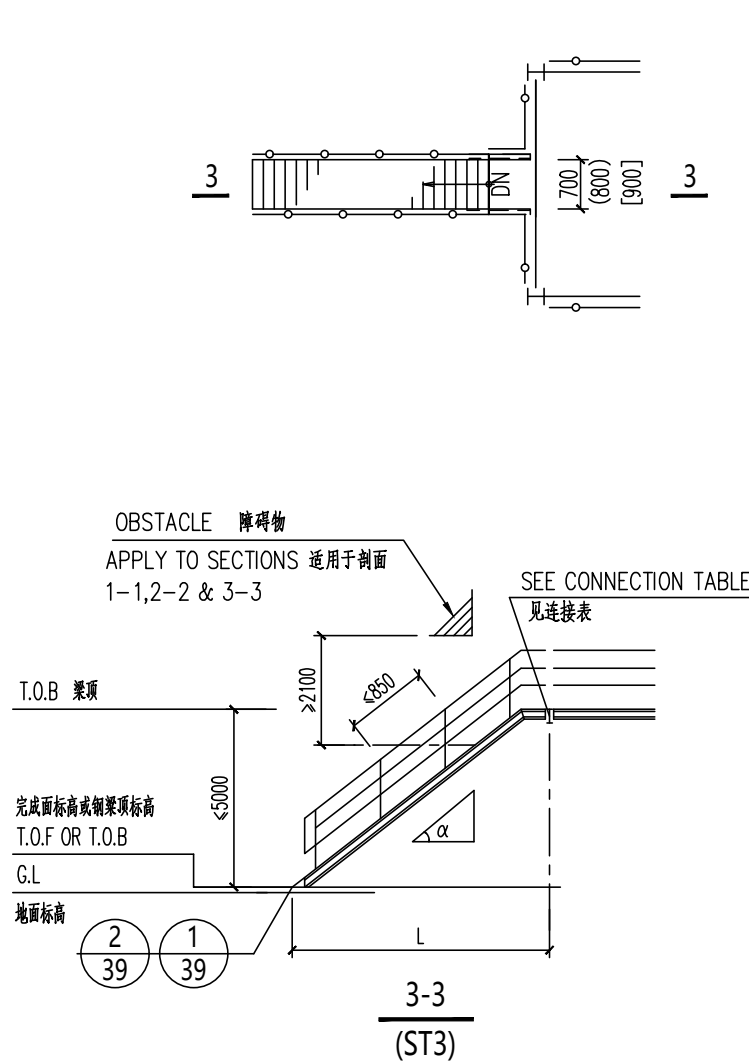
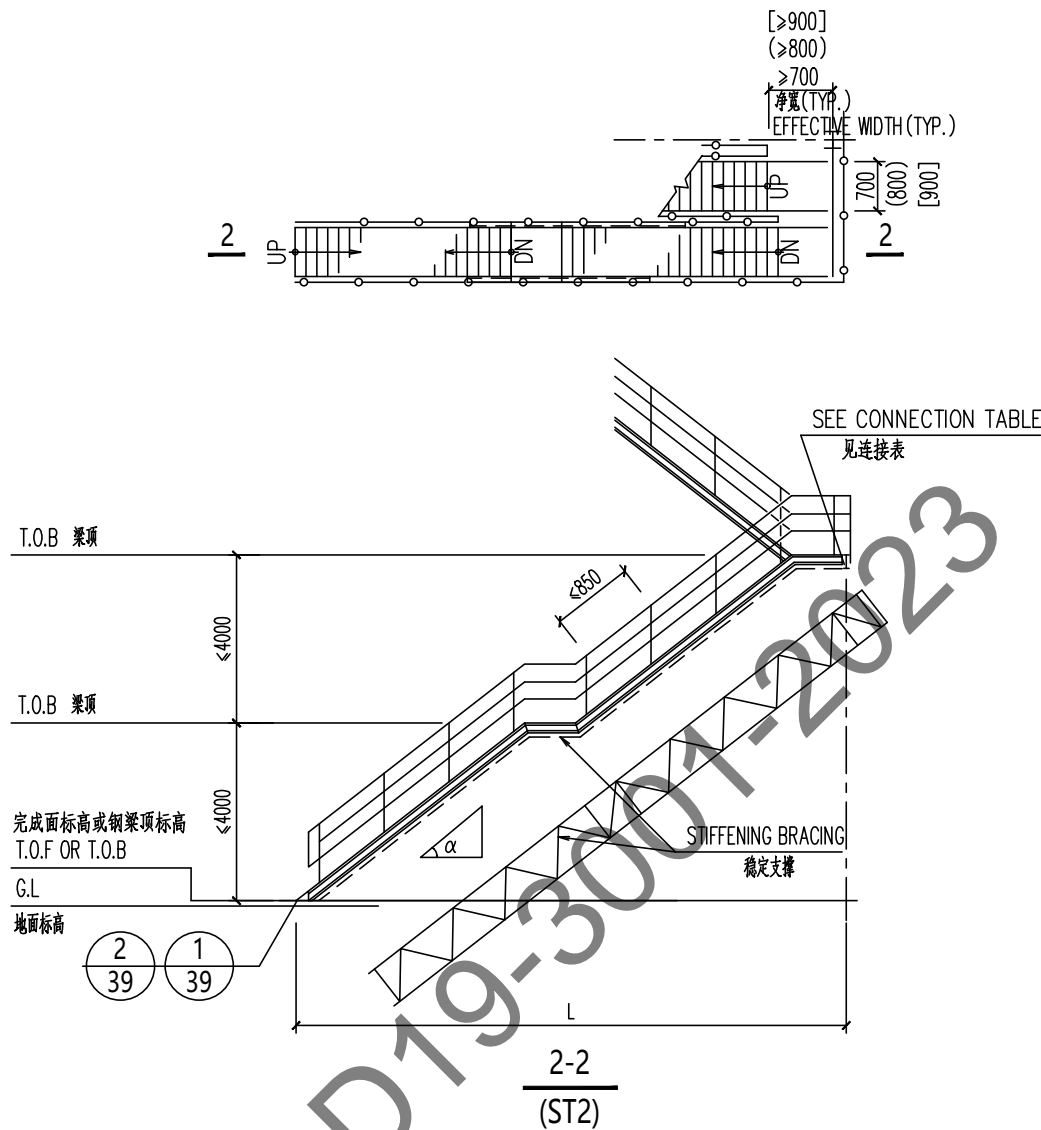
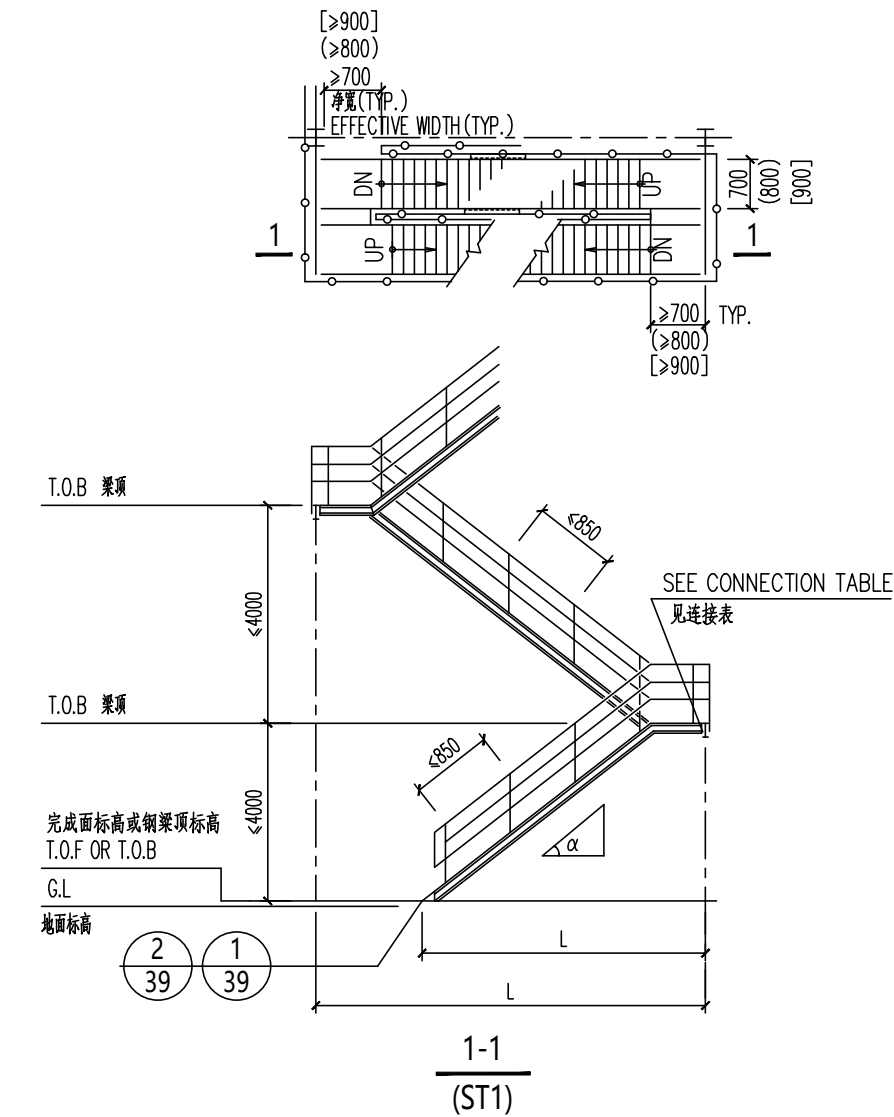
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校核	易宝生 姜晨玉	校核	CKD
设计	曹力慧	设计	DESIGN
日期	2023-12-30	日期	DATE
版次	2023	版次	REV



#### NOTES 说明:

1. THE 1200mm HEIGHT OF HANDRAIL SHALL BE USED FOR THE PLATFORM WITH HEIGHT FORM DATUM PLANE NO LESS THAN 20m.

1200mm 高栏杆在平台距基准面的高度不小于20m时采用。

2. FOR ONE SINGLE STAIR, THE NUMBER OF STEPS SHALL BE NOT MORE THAN 25. THE OTHER ANY FLIGHT OF STAIRS SHALL HAVE NOT MORE THAN 20 STEPS.

对于单坡楼梯,踏步数量不能超过25步,其他任何梯段楼梯都不能超过20步。

3. STIFFENING BRACING SHALL BE APPLIED FOR STAIR BEAMS WITH A HORIZONTAL PROJECTION LENGTH "L" MORE THAN 4.5 METERS.

梯梁水平投影长度 L 超过4.5米时,设置稳定支撑。

4. ALL CUT CORNERS, SIDES AND WELDS AT EXPOSED FACES OF TOP RAILS SHALL BE GROUND SMOOTH.

所有切割面和栏杆扶手焊接表面均应磨光。

5. 38.66° STAIR SHALL BE ADOPTED IN PRIORITY. 45° STAIR IS ONLY ADOPTED UNLESS 38.66° STAIR IS UNFEASIBLE.

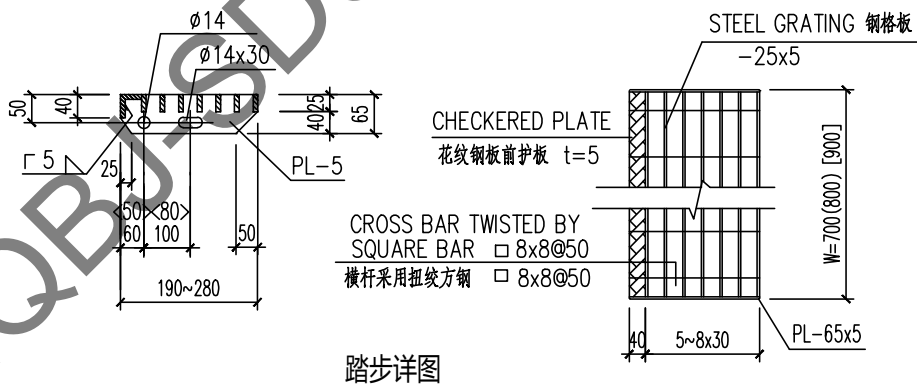
38.66° 钢梯应优先采用, 仅在38.66° 钢梯不能实现时才选用45° 钢梯。

6. THE STANDARD VALUE OF LIVE LOAD ON THE STAIRS IS 3.5kN/m<sup>2</sup>.

本图中楼梯设计活荷载标准值: 3.5kN/m<sup>2</sup>。

7. OVERLAPPING LENGTH IN FRONT AND BACK DIRECTION OF TWO ADJACENT STEPS IS NOT LESS THAN 10mm AND NOT MORE THAN 35mm.

相邻两踏步板的前后方向重叠应不小于10mm, 不大于35mm。



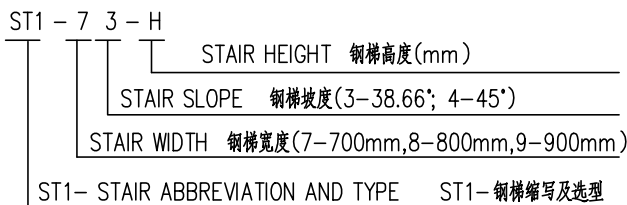
#### 踏步详图

##### DETAIL OF TREAD

◇ APPLY TO  $\alpha = 45^\circ$ , STRINGER IS [16a].

◇ 仅用于 $\alpha = 45^\circ$ , 梯梁为[16a]时采用。

#### STAIR TYPE NOTES 钢梯选用说明



#### STAIR TABLE 楼梯表

ANGLE OF GRADIENT 坡度角	STRINGER MEMBER 楼梯梁	MAX UNSUPPORTED HORIZONTAL LENGTH "L" 最大水平投影长度 "L"			A	B	e
$\alpha$		W=700	W=800	W=900	(mm)	(mm)	(mm)
$\alpha=38.66^\circ$	[16a]	6000	5500	5500	80	300	35
	[18a]	6500	6500	6000	110	350	40
	[20a]	7500	7000	7000	150	400	45
	[22a]	8000	8000	7500	180	400	45
	[25a]	9000	8500	8500	230	450	50
	[28a]	10000	9500	9500	270	500	50
$\alpha=45^\circ$	[16a]	5500	5500	5000	80	300	35
	[18a]	6000	6000	6000	80	300	40
	[20a]	7000	6500	6500	110	350	45
	[22a]	7500	7500	7000	140	400	45
	[25a]	8500	8000	8000	180	400	50
	[28a]	9500	9000	9000	220	450	50



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#### 钢梯详图 (1/3)

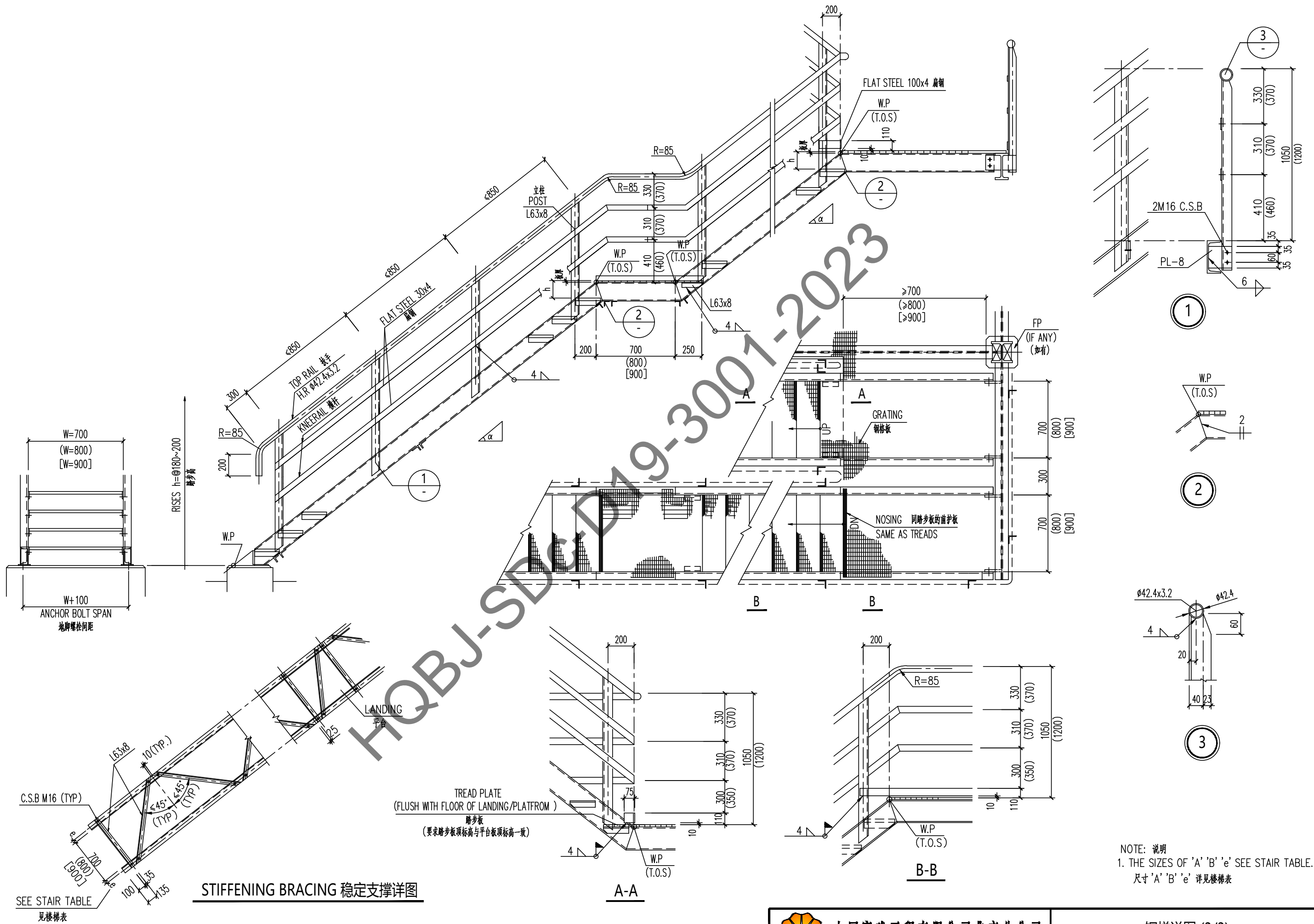
DETAIL OF STAIRWAYS (1/3)





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2023-12-30	日期 DATE	曹力慧	易宝生 姜晨玉	郑建华



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标准图  
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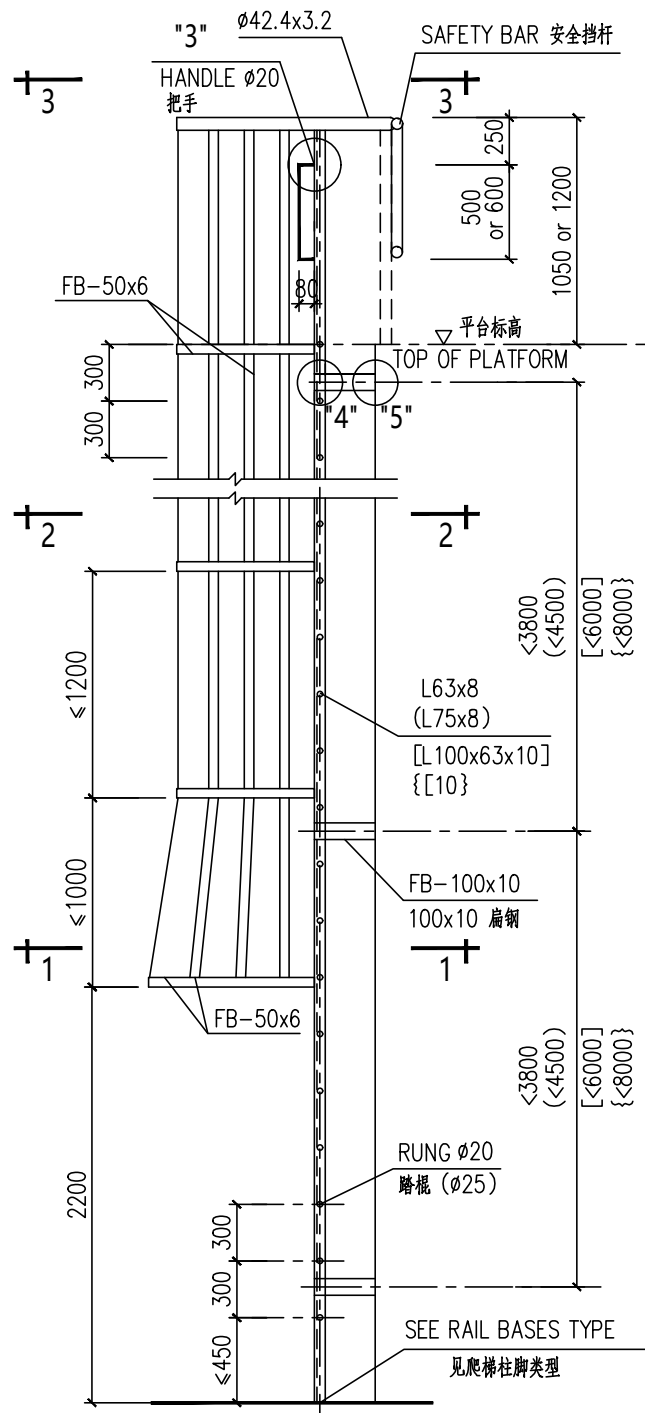
钢梯详图 (3/3)  
DETAIL OF STAIRWAYS (3/3)

HQBJ-SDc-D19-3001-2023

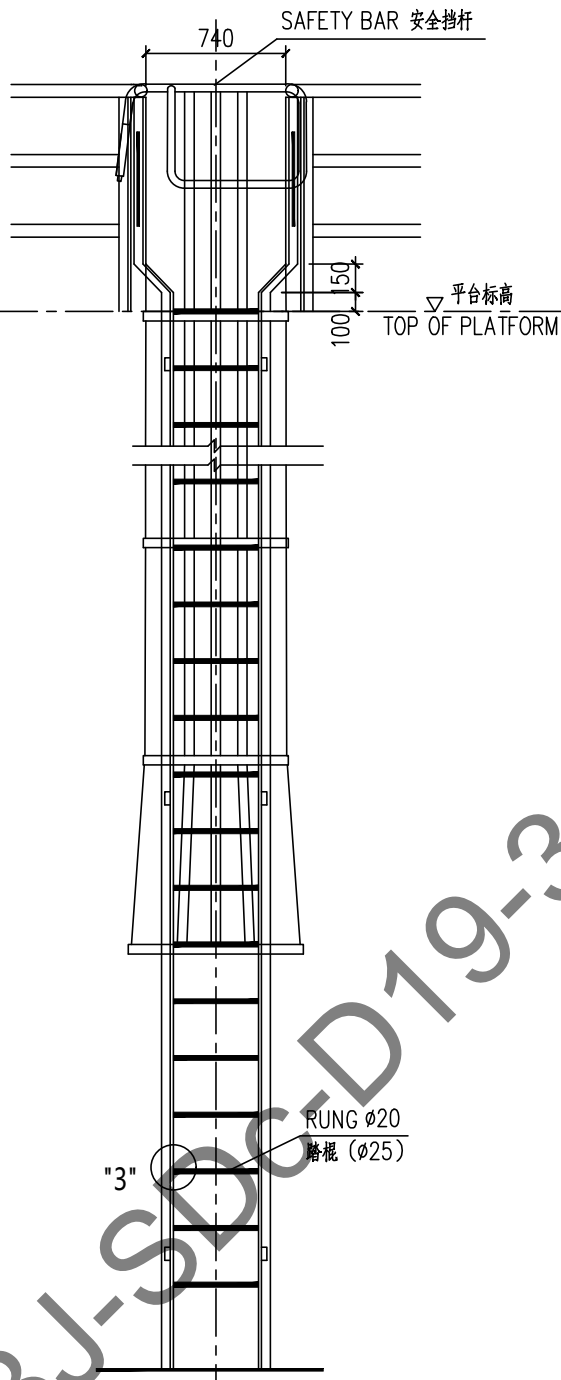
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审核	郑建华	审核	DISC APP.
设计	曹力慧	设计	DESIGN
日期	2023-12-30	日期	DATE
版次	2023	版次	REV



正上侧立面图 (LD1)  
LADDER ELEVATION FOR STEP-THROUGH



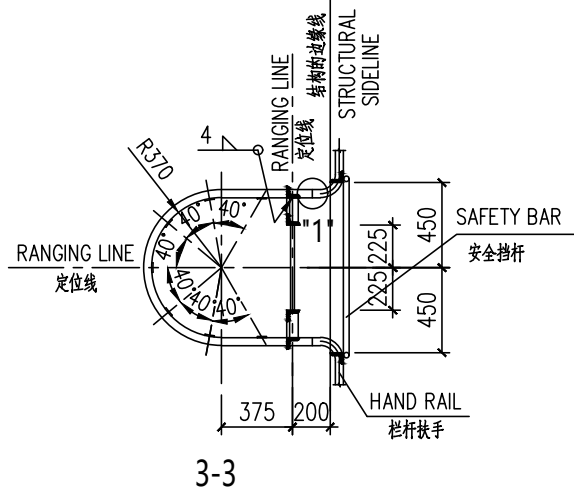
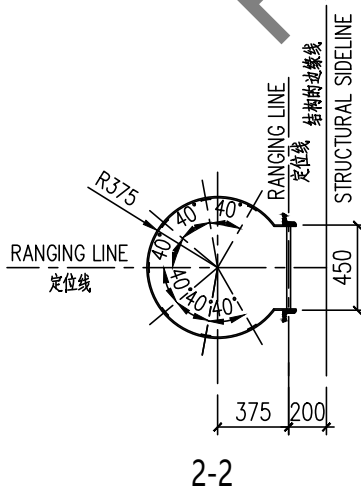
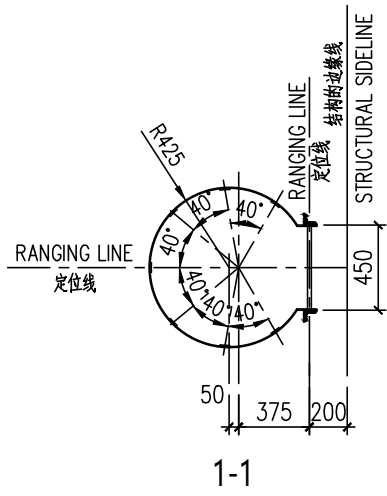
正上爬梯立面图 (LD1)  
LADDER ELEVATION FOR STEP-THROUGH

NOTES 说明:

- SAFETY CAGE IS NOT REQUIRED FOR LADDERS LOWER THAN 3m ABOVE THE FLOOR LEVEL.  
爬梯高度低于3m时可不设护圈。
- THE SINGLE LADDER HEIGHT SHALL NOT EXCEED 9m.  
单个爬梯高度将不能超过9m。
- THE DIRECTION FOR LADDER EXIT SEE THE DESIGN DRAWING.  
直爬梯出口方向详见设计图。
- THE LADDER RUNG SHALL BE ROUND BAR WITH DIAMETER OF D20/D25.  
D25 IS APPLICABLE TO HUMID OR CORROSIVE ENVIRONMENT, WHICH SHOULD BE SPECIFIED IN PROJECT SPECIFICATION AND (OR) DESIGN DRAWING.  
爬梯踏棍为圆钢直径D20/D25, D25适用于潮湿或腐蚀环境, 具体见各项目《结构工程施工总说明》及单体结构设计图纸。
- DETAIL "1"~"5" DETAILS SEE PAGE 43.  
详图"1"~"5" 见第43页。
- LADDER RAIL BASE TYPE SEE PAGE 43.  
爬梯柱脚类型见 第43页
- SAFETY GATE DETAIL SEE PAGE 43.  
安全门详图见 第43页

LADDER TYPE NOTES: 爬梯选型说明:

LD1 - X (A)	A,B,C- RAIL BASES TYPE A,B,C- 爬梯柱脚类型
LADDER NUMBER 直爬梯编号	
LD1- LADDER ABBREVIATION AND TYPE LD1- 爬梯缩写及选型	



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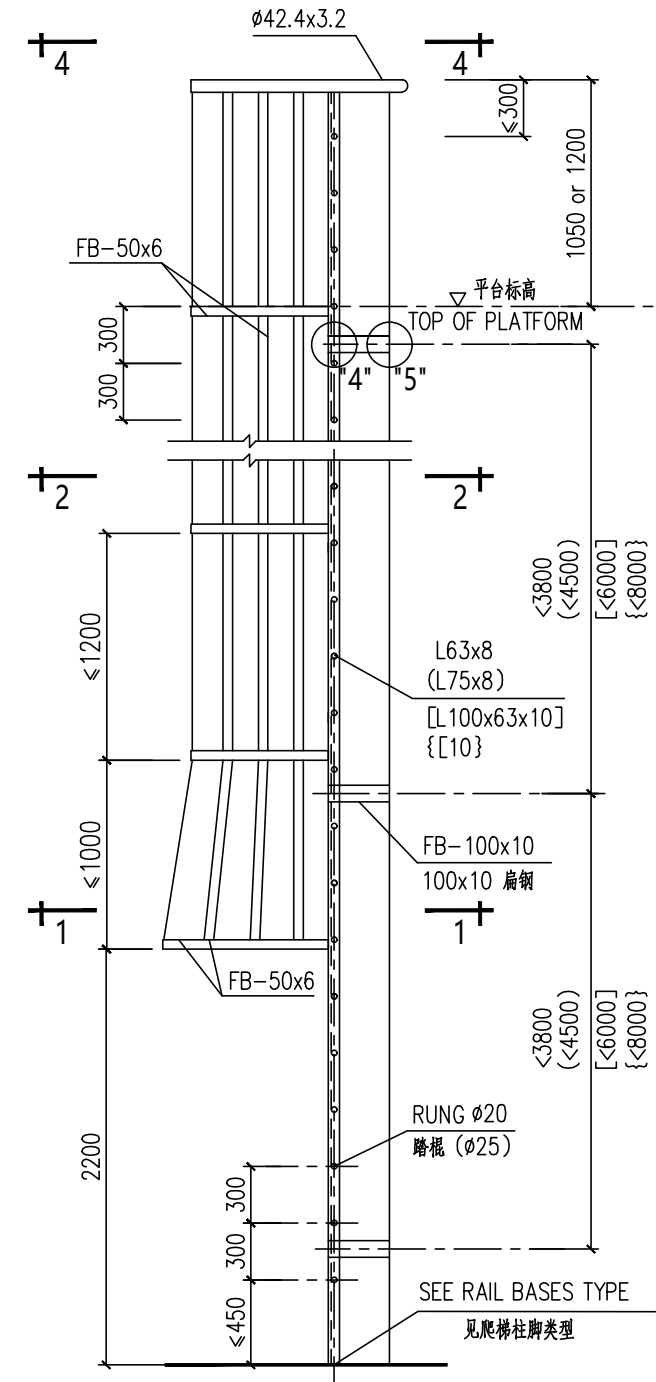
第 41 张 共 49 张  
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直爬梯详图(1/3)

DETAIL OF LADDERS (1/3)

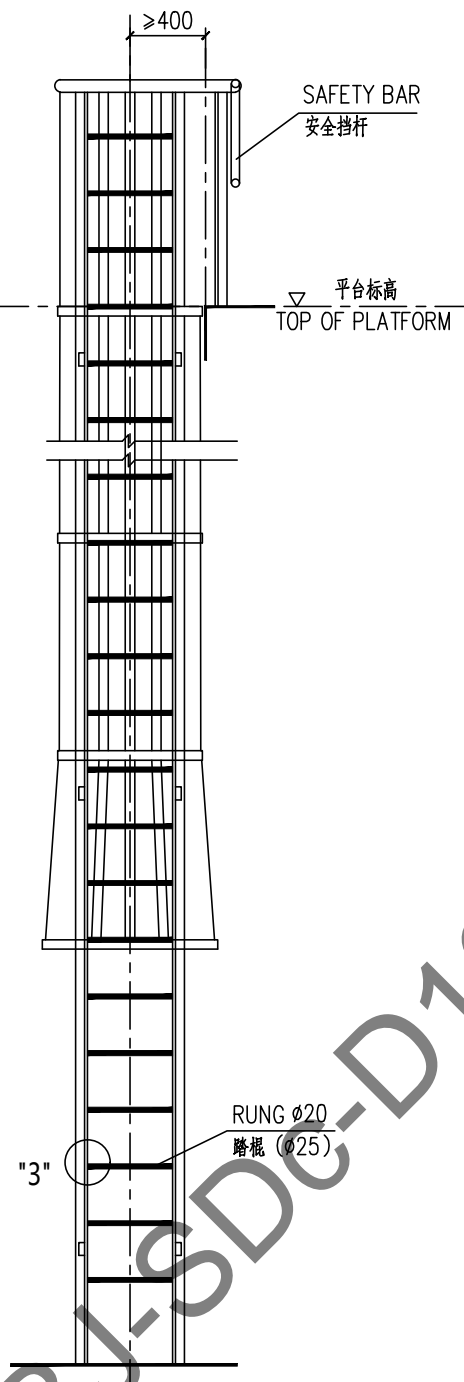
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		曹力慧	易宝生 姜晨玉	郑建华



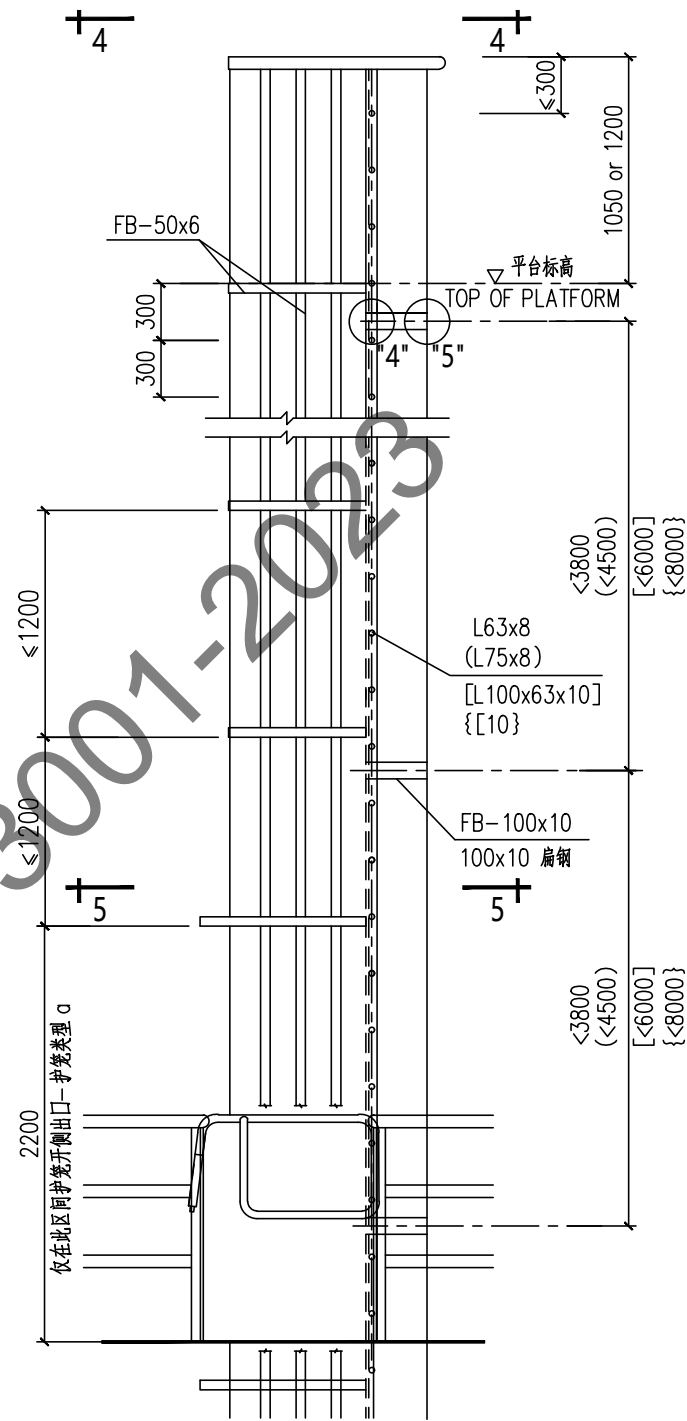
侧上侧立面图 (LD2)

LADDER ELEVATION FOR SIDE-STEP



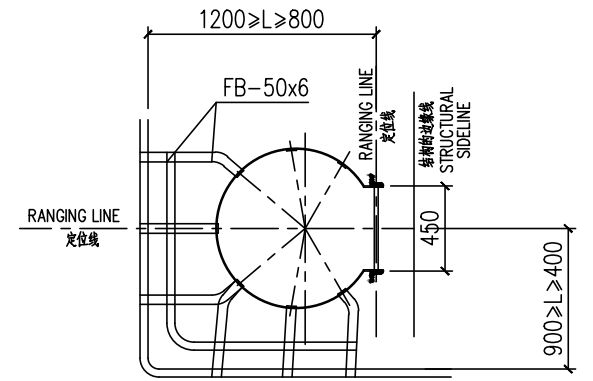
侧上爬梯立面图 (LD2)

LADDER ELEVATION FOR SIDE-STEP

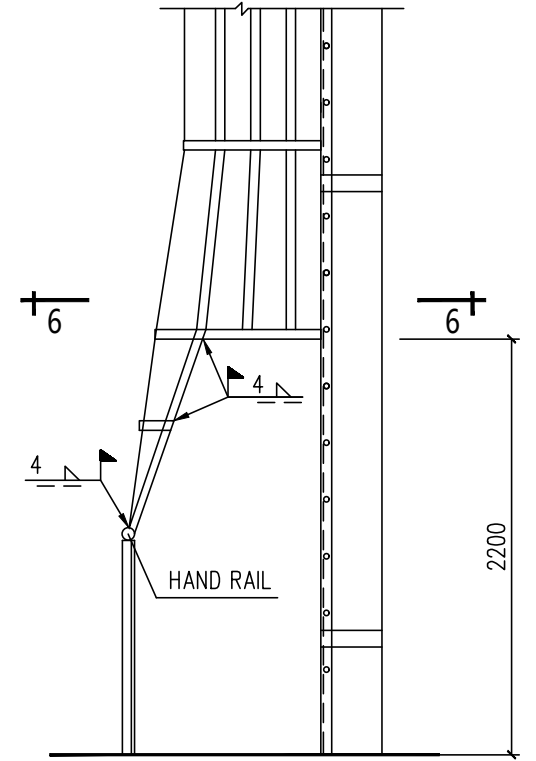


护笼中间开侧出口立面图 (LD3)  
(护笼类型 a)

ELEVATION FOR SIDE ACCESS OF CAGE HOOP



6-6



护笼补加护条详图 (护笼类型 b)

SUPPLEMENT GUARD BAR OF CAGE HOOP

NOTE: 说明

1. DETAIL "1" ~ "5" DETAILS SEE PAGE 43.  
详图"1"~"5" 见第43页。
2. SECTION 1-1, 2-2, SEE PAGE 41.  
剖面1-1, 2-2 见第41页。
3. OTHER NOTES SEE PAGE 41.  
其它说明见第41页。



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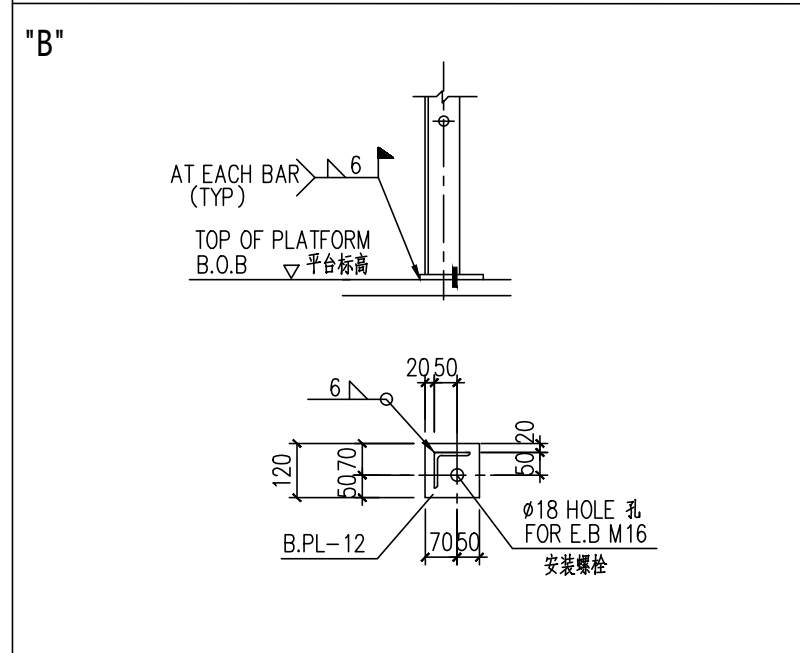
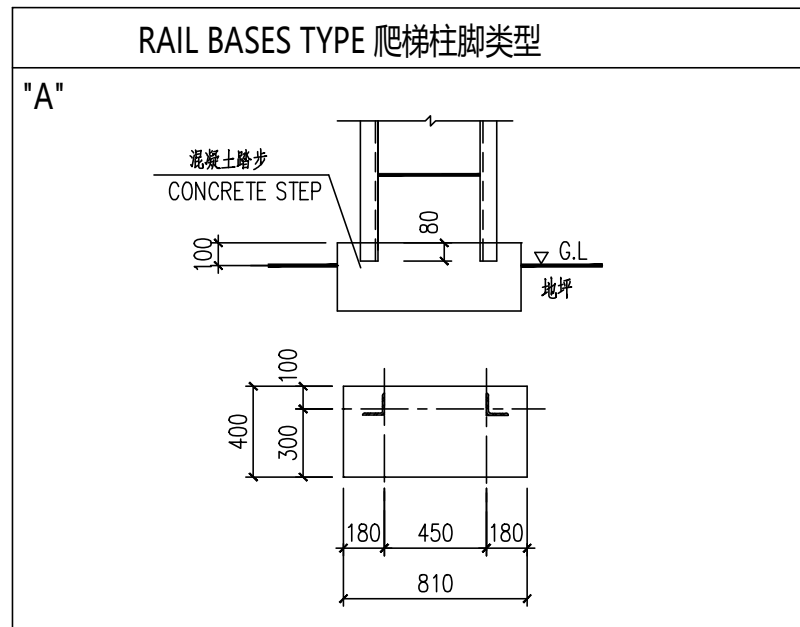
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直爬梯详图(2/3)

DETAIL OF LADDERS (2/3)

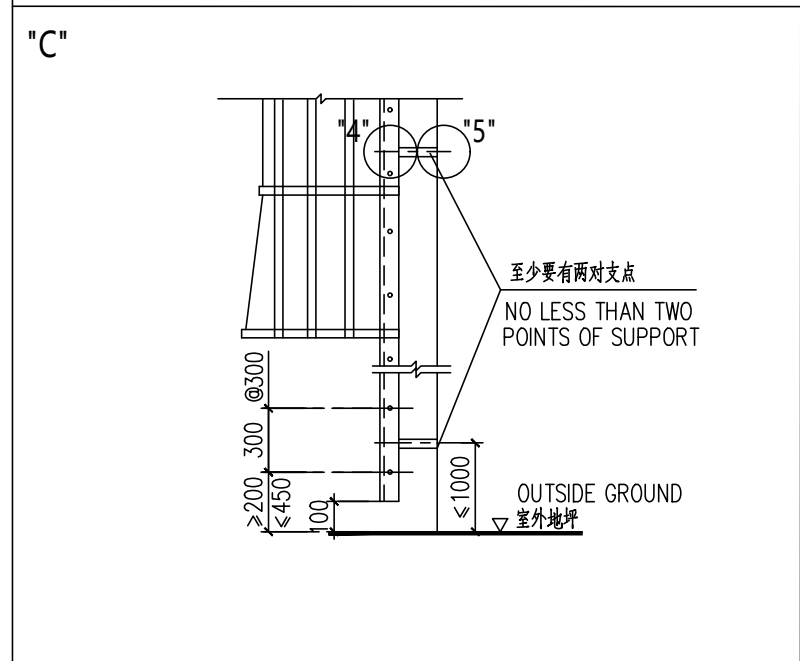




LADDER - SAFETY GATE DETAIL 爬梯安全门详图

The drawing illustrates the construction of a ladder safety gate with the following details:

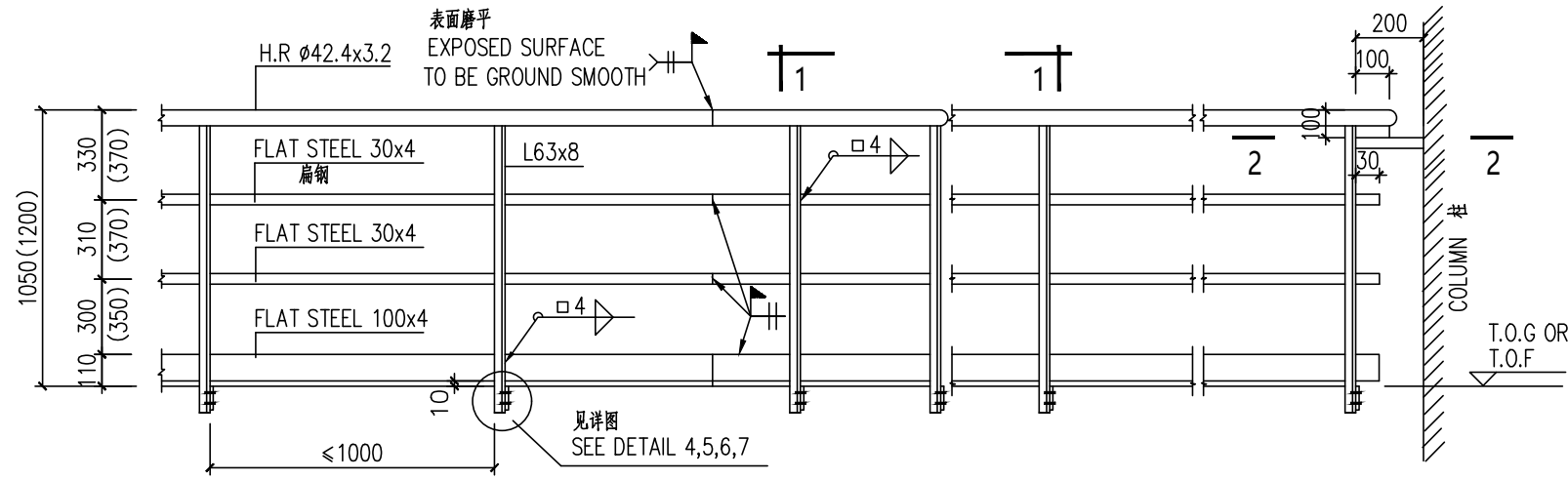
- Side Elevation (Left):** Shows a U-shaped safety bar with a height of 550 and a top rail width of 675. The bar has a 150 RAD fillet and is made of  $\phi 42.4 \times 3.2$  material. The top of the platform is indicated.
- Front Elevation (Middle):** Shows the gate's profile with a top rail (顶扶手) and a spacer plate (垫板) labeled PL-40x230x16. Dimensions include 240, 230, 210, 265, and 5. The material is  $\phi 42.4 \times 3.2$  NOM BORE PIPE.
- Detail of Top Rail Connection (Right):** Shows the connection between the top rail and the platform. It includes a 150 RAD fillet, a 32 DIA ROD, and a  $\phi 54 \times 6$  WASHER PLATE with  $\phi 34$  HOLES. The connection is secured with  $\phi 8$  HOLE FOR  $\phi 6 \times 55$  COTTER PIN. The material is  $\phi 42.4 \times 3.2$  H.R.



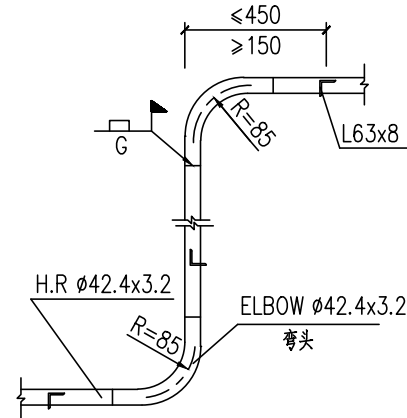
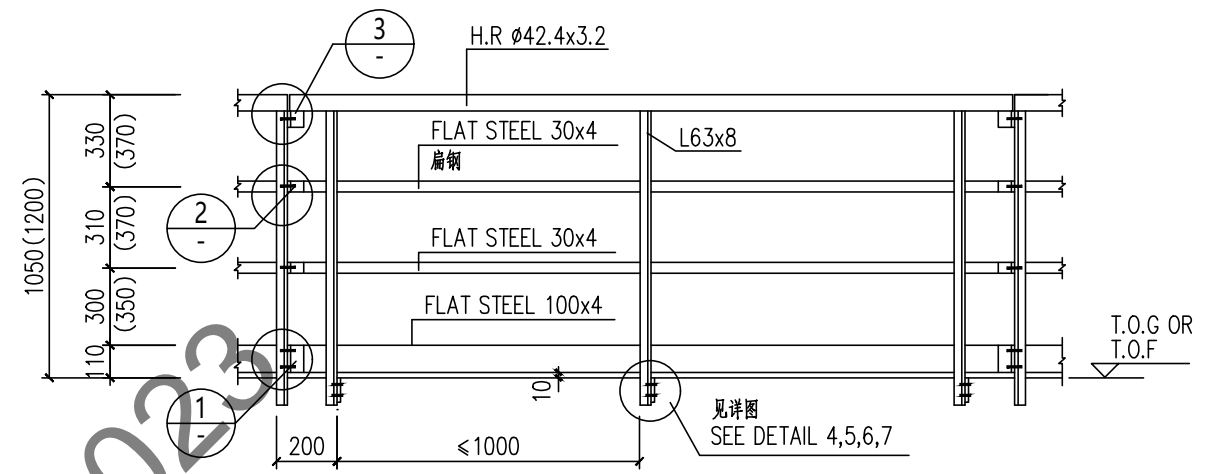
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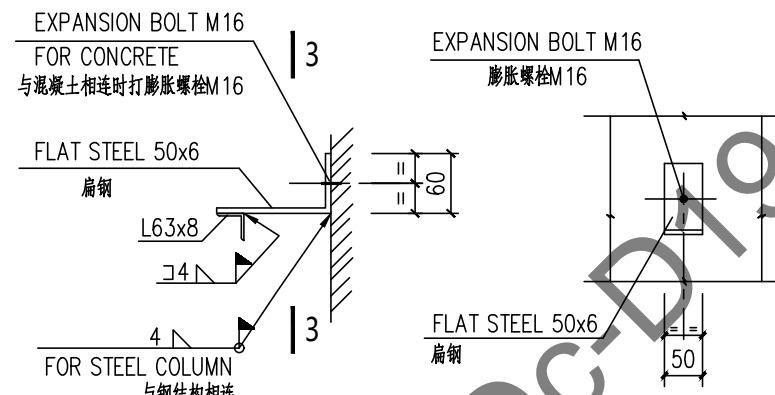
## FIXED HANDRAIL 固定栏杆



## REMOVABLE HANDRAIL 活动栏杆

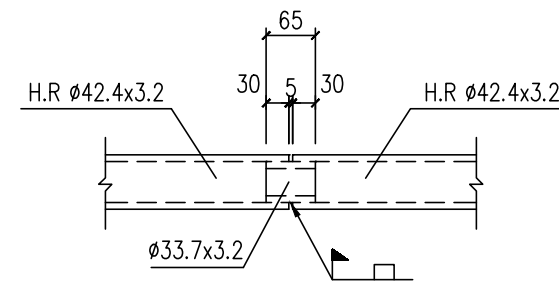


1-1  
HANDRAIL CONNECTION AT CORNER  
栏杆扶手转角连接



2-2

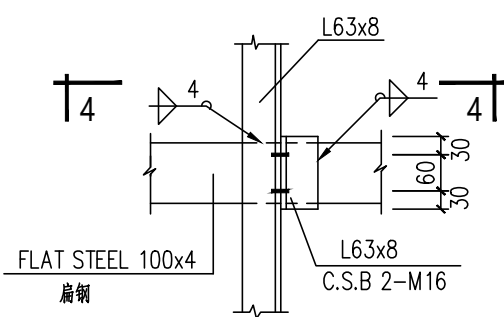
3-3



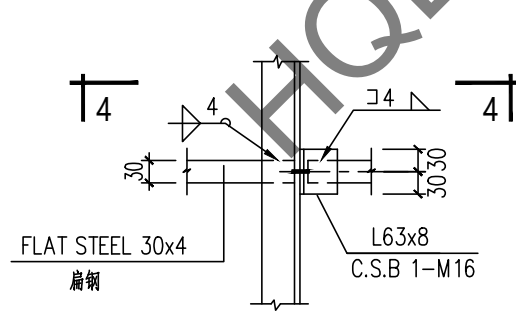
栏杆扶手连接详图  
HAND RAIL JOINT DETAIL

### NOTES 说明:

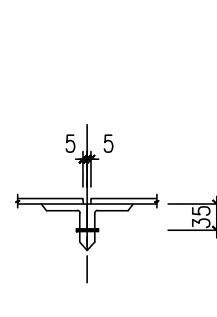
- ALL CUT CORNERS, SIDES AND EXPOSED SURFACES OF WELDING ON TOP RAILS SHALL BE GROUND SMOOTH.  
所有切割面和栏杆扶手焊接表面均应磨光。
- ( ) APPLY TO THE PLATFORM WITH THE HEIGHT FROM DATUM PLANE NO LESS THAN 20m.  
( ) 用于当平台距基准面高度不小于20m时采用。
- DETAIL "4~7" SEE PAGE 45.  
详图 "4~7" 见第45页。



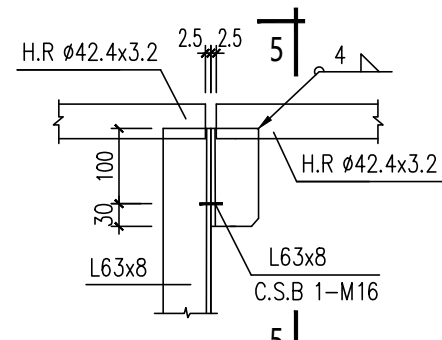
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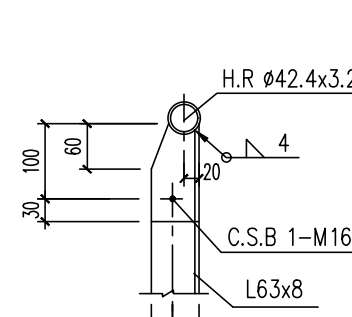
2



4-4



3



5-5



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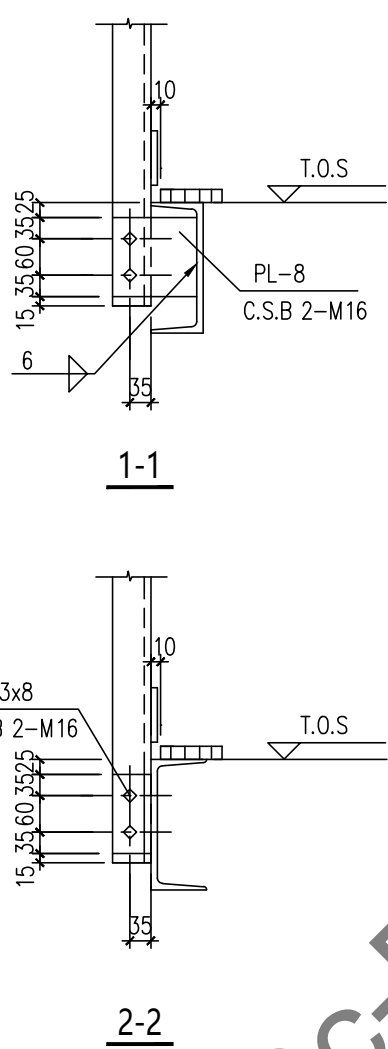
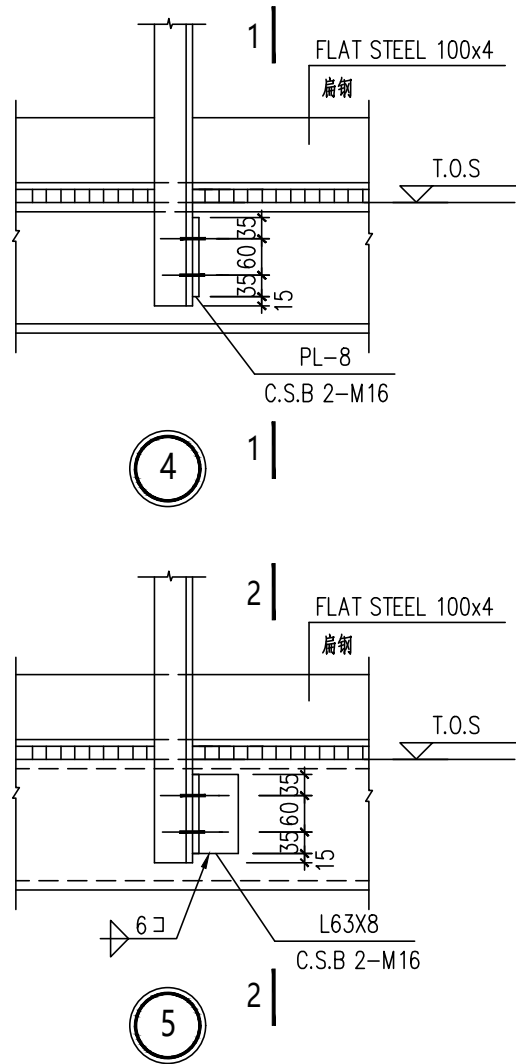
### 栏杆详图 (1/2)

DETAIL OF HANDRAILS (1/2)

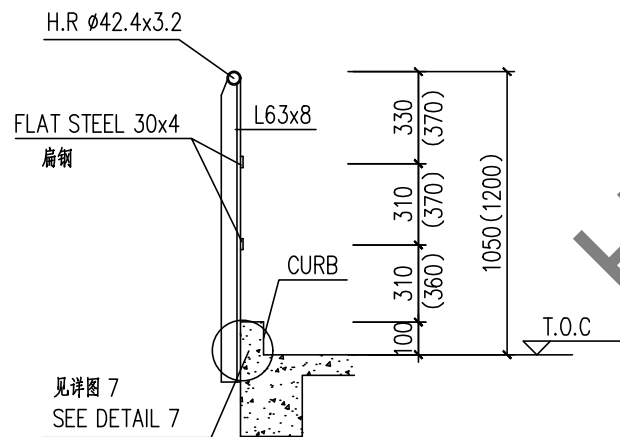
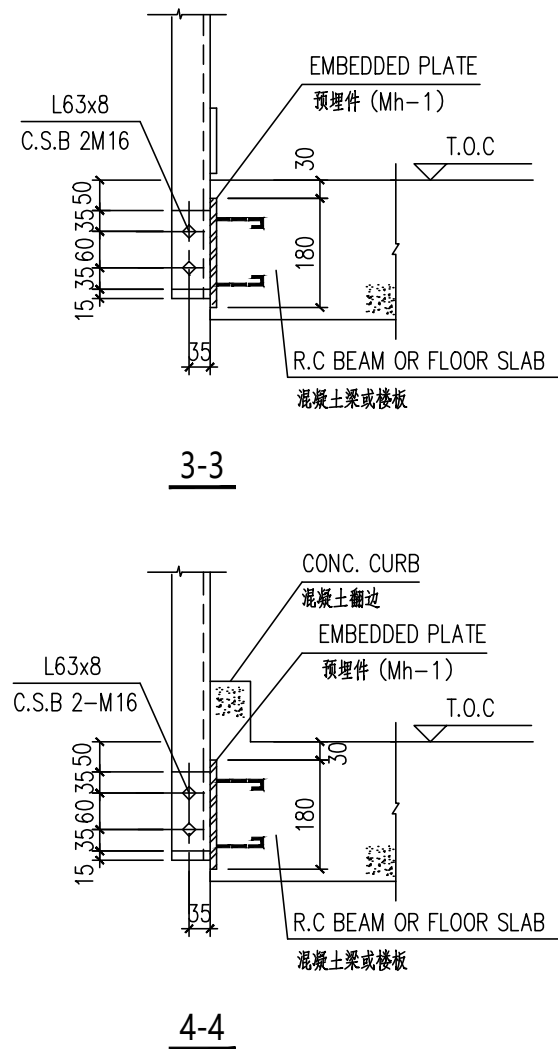
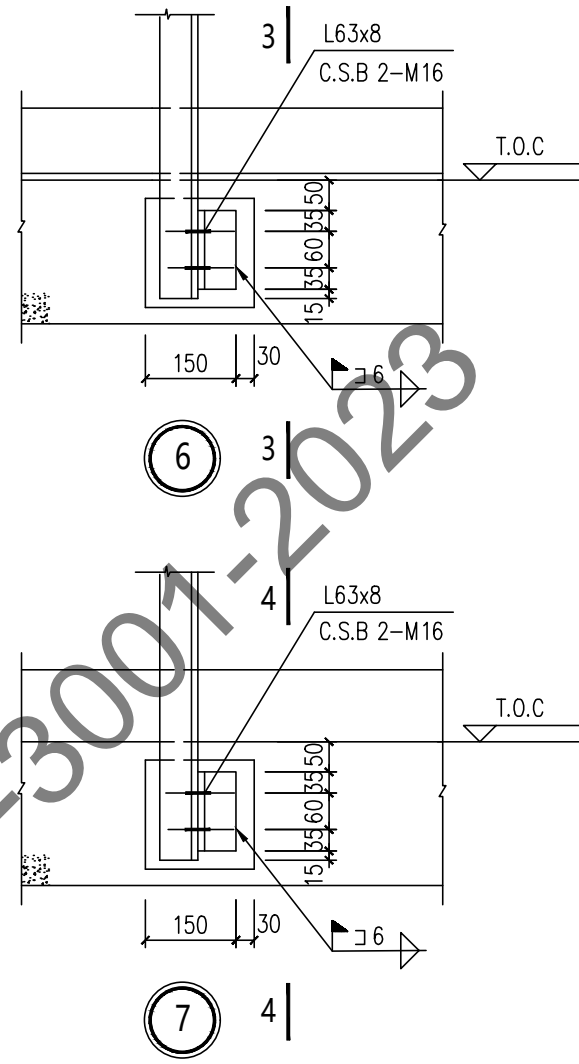
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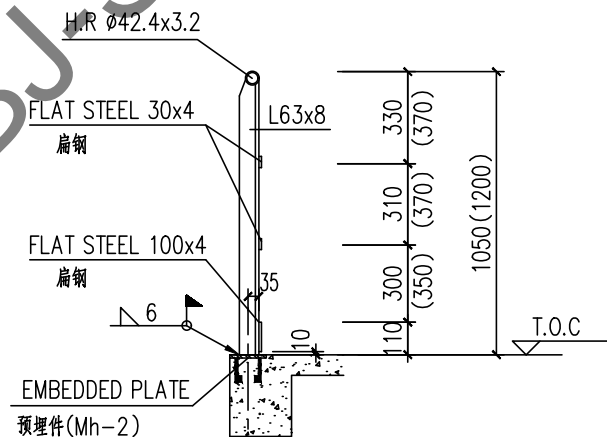
## CONNECTED WITH STEEL STRUCTURE 与钢结构连接



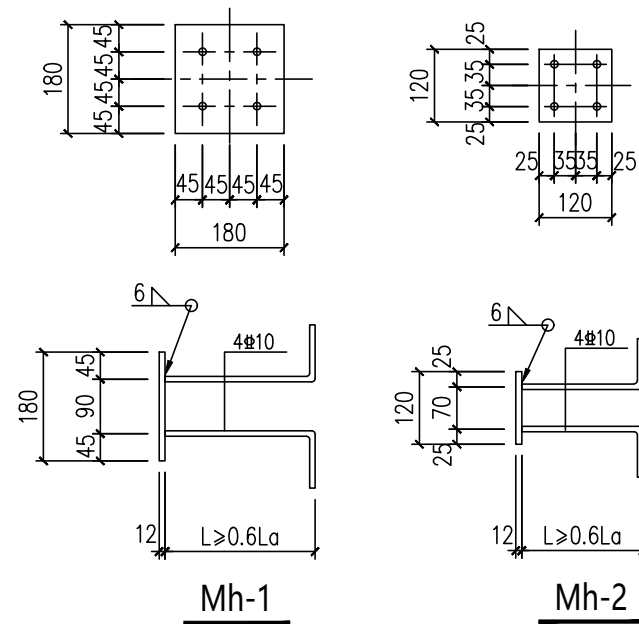
## CONNECTED WITH CONCRETE 与混凝土连接



栏杆与混凝土翻边楼面连接详图  
DETAIL FOR HANDRAIL CONNECT TO CONCRETE FLOOR CURB



栏杆与混凝土楼面连接详图  
DETAIL FOR HANDRAIL CONNECT TO CONCRETE FLOOR



NOTES 说明:  
1. ANCHORAGE LENGTH OF BAR  $L_a \geq 36d$  (C30),  $32d$  (C35),  $30d$  (C40).  
锚筋的锚固长度  $L_a \geq 36d$  (C30),  $32d$  (C35),  $30d$  (C40).



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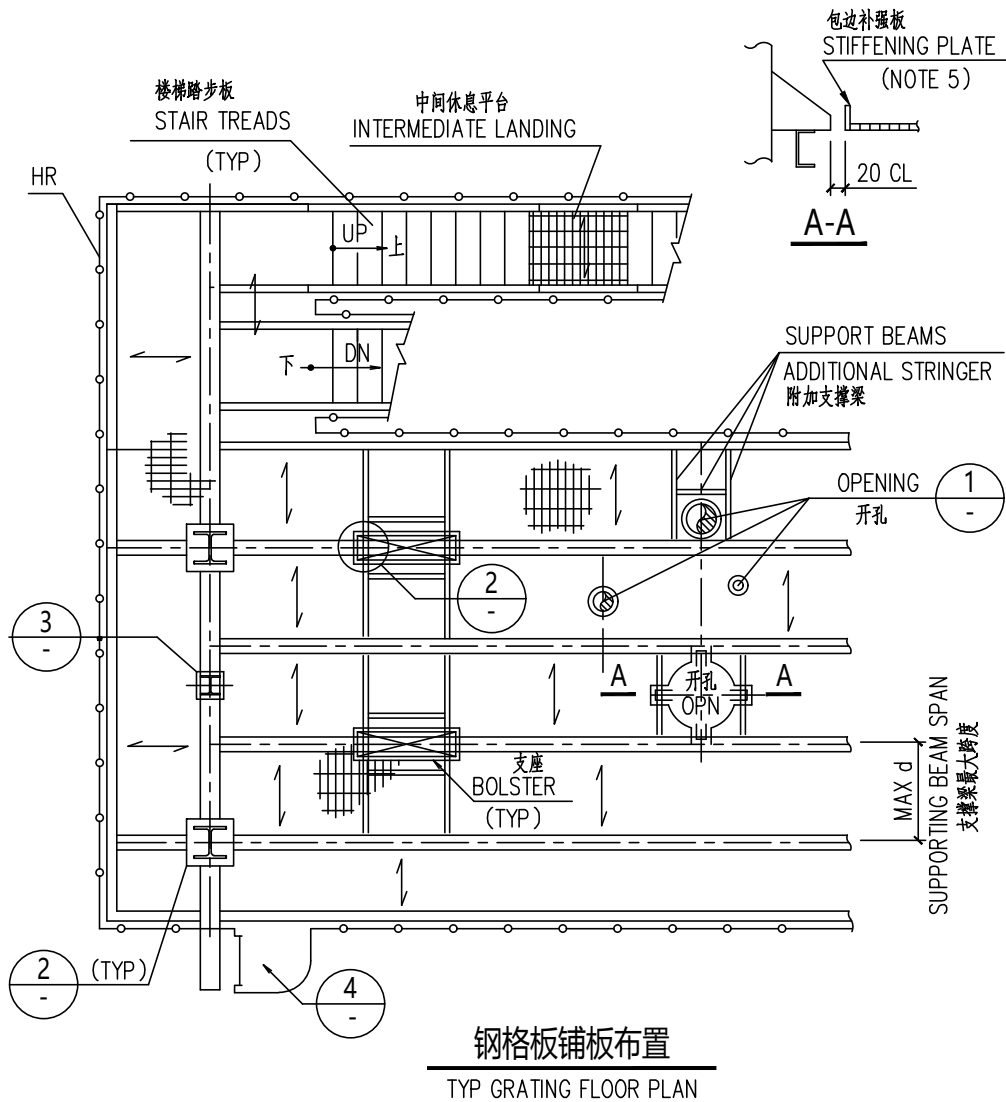
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栏杆详图 (2/2)  
DETAIL OF HANDRAILS (2/2)

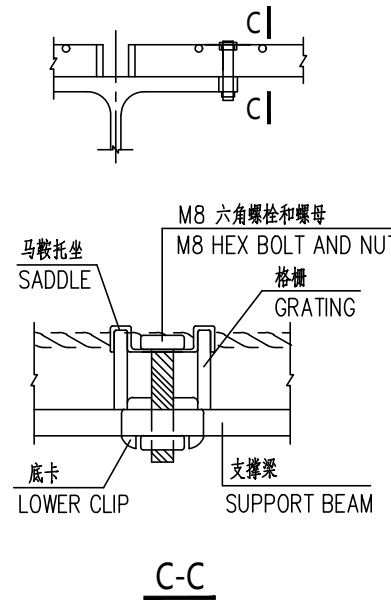
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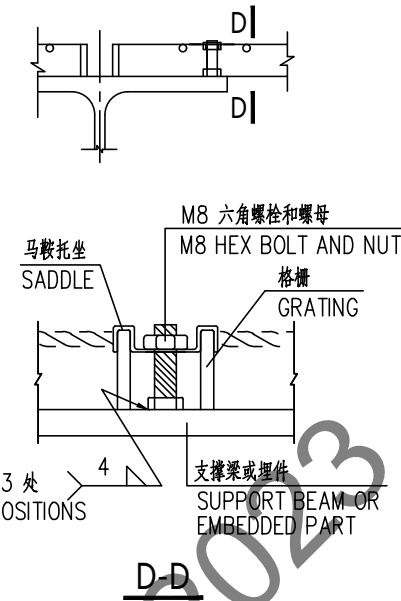


钢格板铺板布置  
TYP GRATING FLOOR PLAN

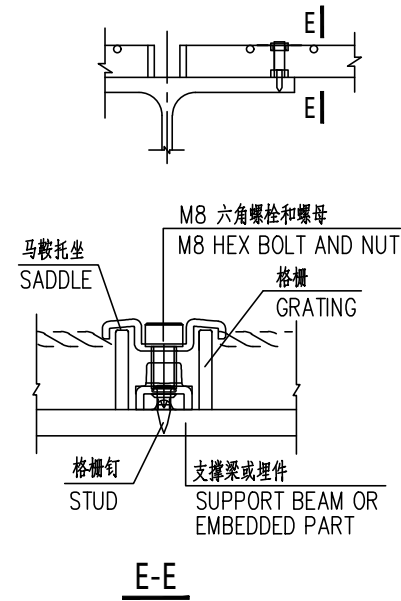
NORMAL CLAMP 常用夹具



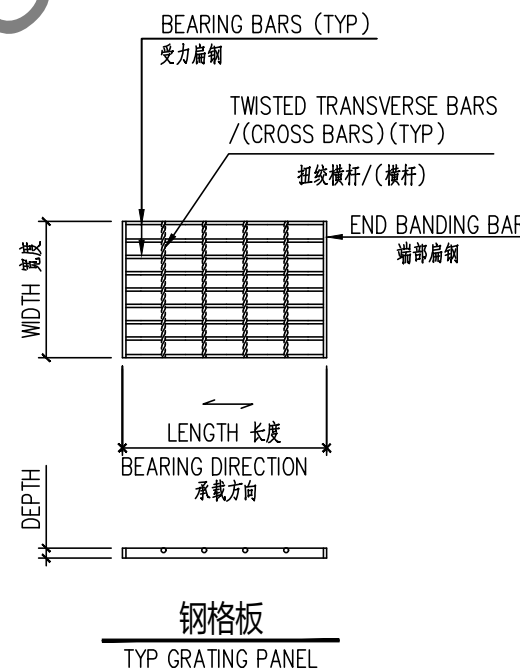
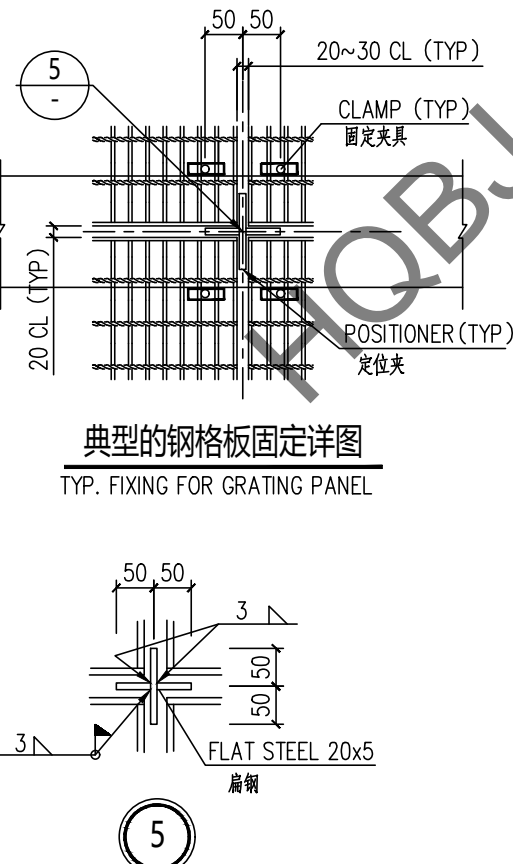
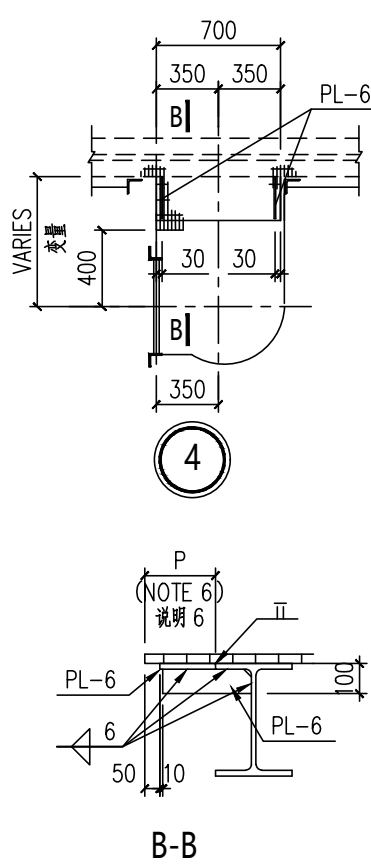
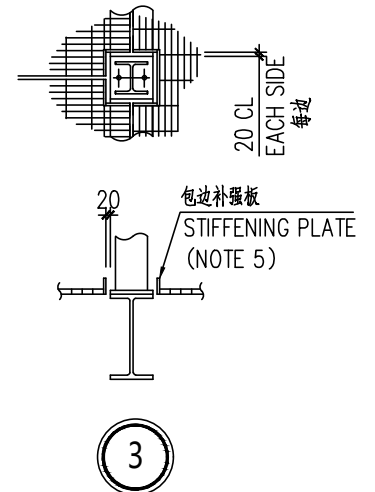
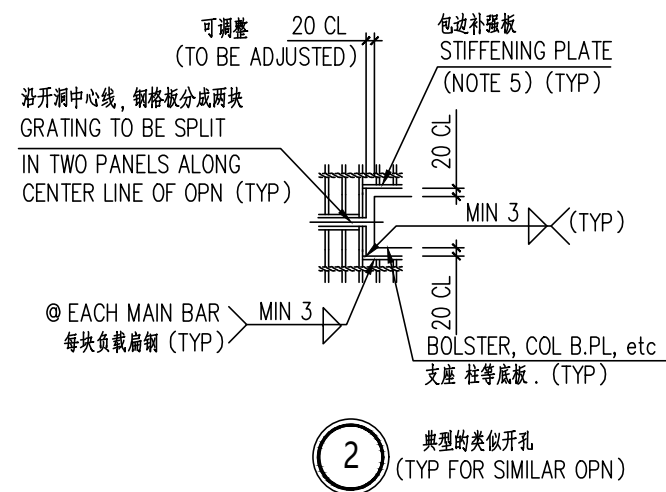
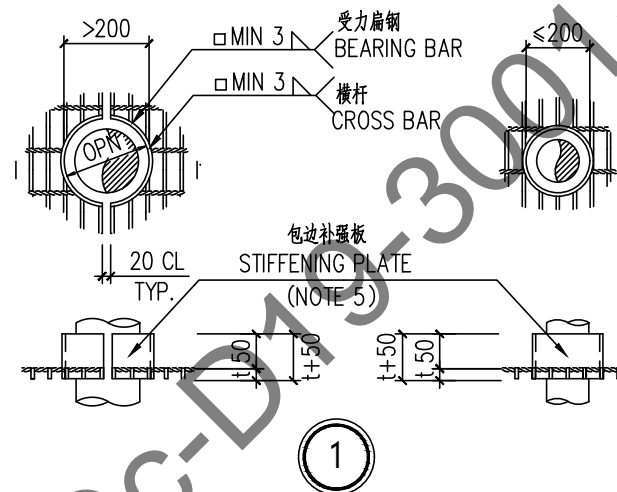
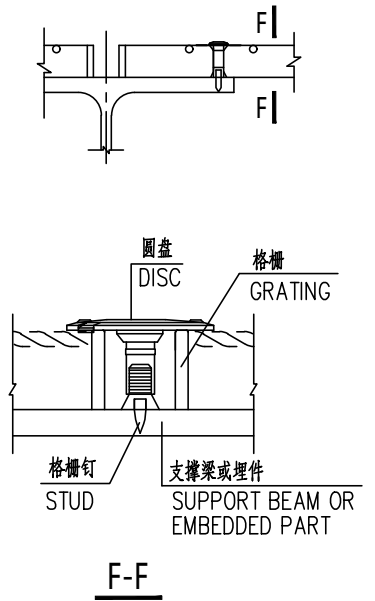
WELDED CLAMP 焊接夹具



STUD CLAMP 射钉夹具



DISC CLAMP 圆盘夹具



NOTES 说明:  
1.GRATING PANELS, STAIR TREADS AND FIXING MATERIALS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH YB/T4001.1-2019, YB/T4001.3-2020 GRATING TYPE SEE ENGINEERING DESIGN DRAWING.  
钢格板、楼梯踏步板及固定件均采用热浸镀锌,并满足YB/T4001.1-2019, YB/T4001.3-2020的要求。钢格板选型见工程设计图。  
2.THE MINIMUM WIDTH OF WALKWAYS, PLATFORMS AND STAIRWAYS SHALL BE 700mm.  
走道、平台和楼梯的最小宽度为700mm。  
3.EACH GRATING PANEL SHALL BE FIXED TO FLOOR BEAMS BY MEANS OF AT LEAST 4 CLAMPS. (THE WEIGHT OF EACH PANEL SHALL NOT EXCEED 75kg)  
每块钢格板应至少有四点与平台梁固定(单块板重不超过75kg)  
4.THE WEIGHT OF THE REMOVABLE GRATING SHALL NOT EXCEED 25kg.

可移动钢格板单块板重不超过 25kg。  
5.REINFORCEMENT WITH STIFFENING RINGS OR PLATES SHALL BE PROVIDED AS APPROPRIATE. SIZE OF THE STIFFENING RINGS OR PLATES SHALL BE MIN. 80X5mm.  
补强包边板应提供适当的尺寸,其最小尺寸为80X5mm。  
6.WHERE DIMENSION "P" IS LESS THAN 120mm, THESE PLATES ARE NOT REQUIRED.WHERE DIMENSION "P" IS BETWEEN 120mm AND 300mm, THESE PLATES ARE NECESSARY.  
当"P<120mm"时,则不需要加宽支撑梁翼缘板  
当"120mm≤P≤300mm"时,则需要加宽支撑梁翼缘板  
7.THE END SUPPORT LENGTH OF GRATING PANEL IN THE DIRECTION OF THE BEARING BARS SHALL NOT BE LESS THAN 25mm.  
钢格板承载扁钢方向两端在支承梁上的支撑长度每端不得小于25mm。



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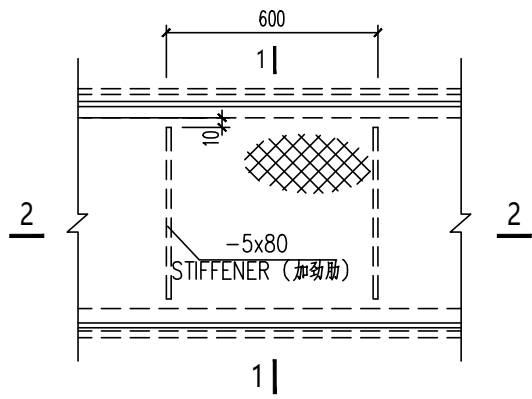
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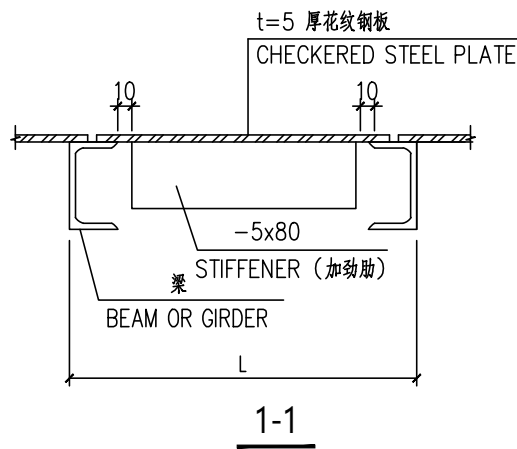
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版次	2023-12-30	日期	DATE
REV	2023	REV	REV

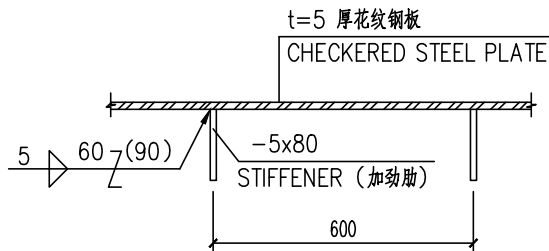


花纹钢板布置(1)

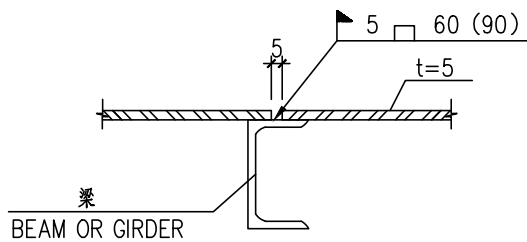
CHECKERED STEEL PLATE PLAN



1-1



2-2



花纹钢板连接详图

CONNECTION DETAIL FOR CHECKERED STEEL PLATE

NOTES 说明:

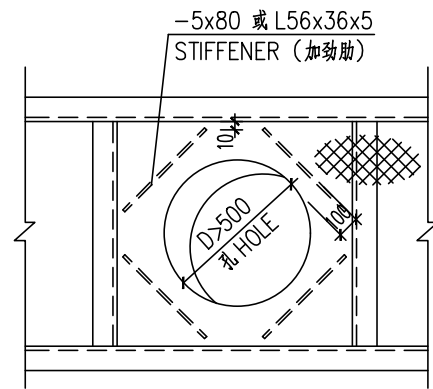
STIFFENER TYPE 加劲肋选型

a.  $L \leq 600\text{mm}$ , NO STIFFENER

$L \leq 600\text{mm}$ , 不需设置加劲肋 (仅适用于  $q \leq 4\text{kN/m}^2$ )

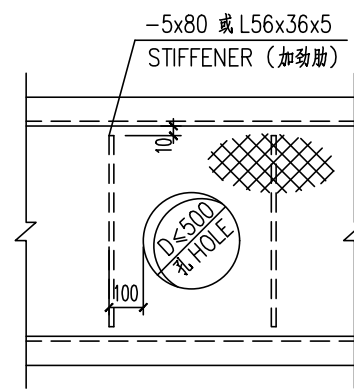
b.  $600 < L \leq 1200\text{mm}$ , STIFFENER TYPE IS -5x80 (Q235)

$600 < L \leq 1200\text{mm}$ , 加劲肋选型为 -5x80 (Q235)



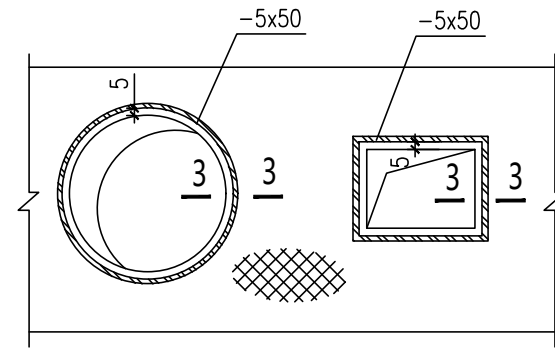
花纹钢板布置(2) ( $D > 500$ )

CHECKERED STEEL PLATE PLAN FOR HOLE  $D > 500$



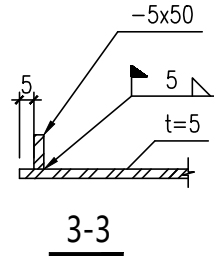
花纹钢板布置(3) ( $D \leq 500$ )

CHECKERED STEEL PLATE PLAN FOR HOLE  $D \leq 500$

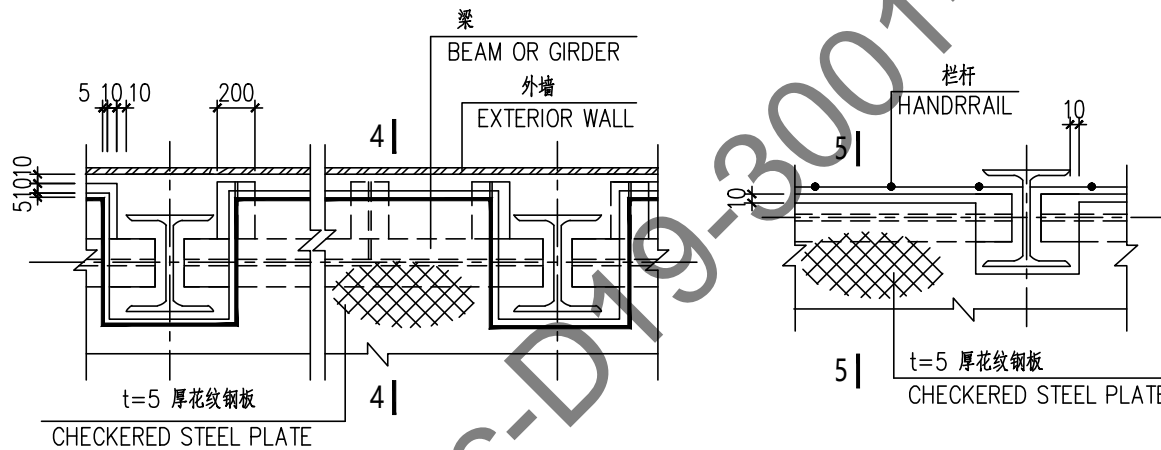


花纹钢板洞口翻边详图

CURB DETAIL FOR CHECKERED STEEL PLATE

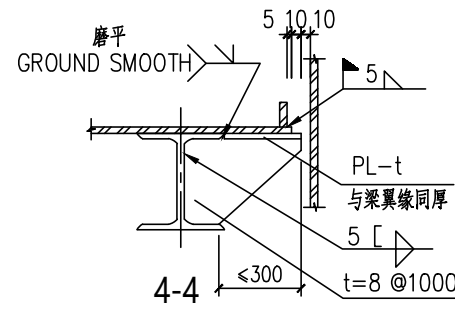


3-3

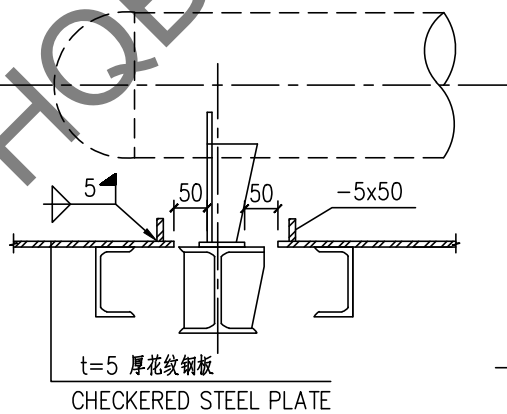


花纹钢板与梁连接详图

CONNECTION DETAIL FOR CHECKERED STEEL PLATE AND BEAM

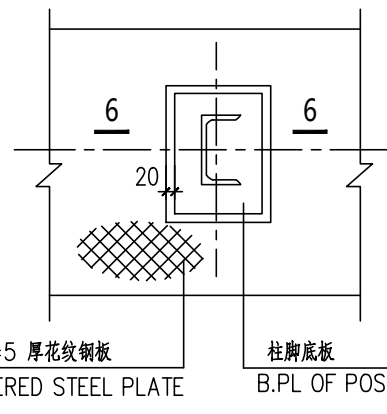


5-5



花纹钢板布置(4) (用于立柱处)

CHECKERED STEEL PLATE PLAN FOR POST



6-6

NOTES 说明:

1. ALL CUT CORNERS, SIDES AND EXPOSED SURFACES OF WELDING SHALL BE GROUND SMOOTH

所有切割面焊接表面均应磨光。



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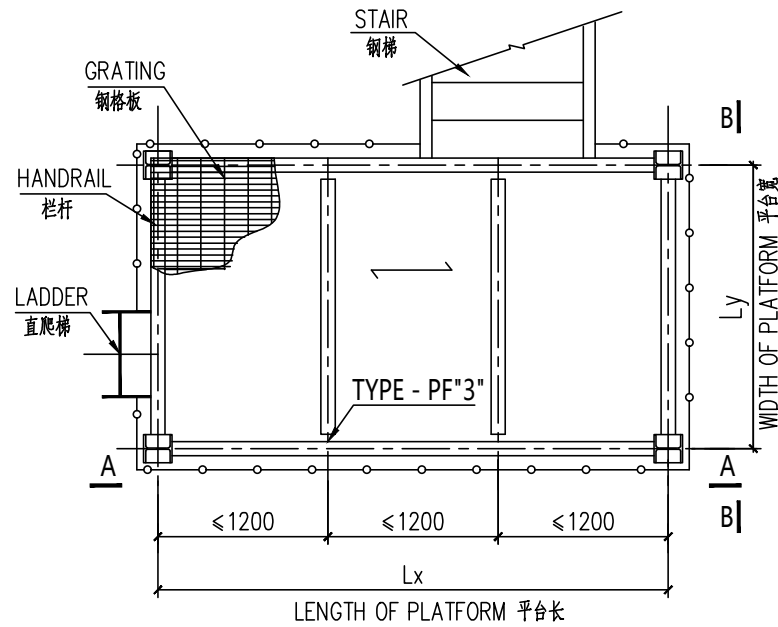
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OF

花纹钢板铺板详图

DETAIL OF CHECKERED STEEL PLATE

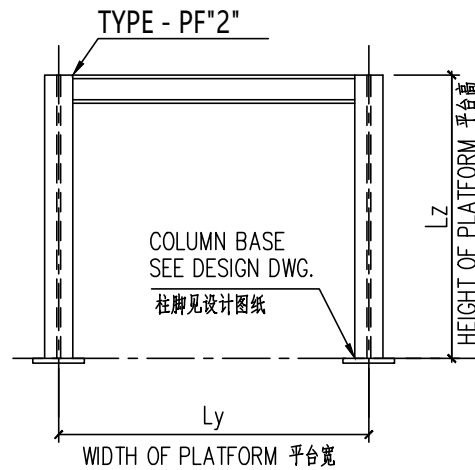
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REV	DATE	CHK	DESIGN	CKD	DISC APP.
		郑建华	曹力慧	易生	姜晨玉



TYPE PF-(I) (Lx ≥ Ly)

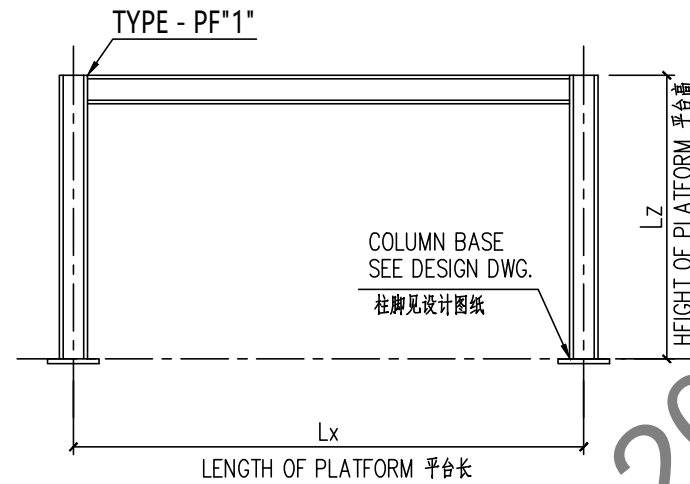
平台类型 I (平台长 ≥ 平台宽)



B-B

PF-(I) SECTION TABLE 平台类型 I 截面选用表

HEIGHT(Lz) OF PLATFORM (mm) 平台高 Lz(mm)	SECTION OF COLUMN 柱截面	SECTION OF GIRDER & BEAM 梁截面
2000 ≤ Lz ≤ 2500	HW150x150x7x10	HN150x75x5x7
1500 ≤ Lz < 2000	HW125x125x6.5x9	
Lz < 1500	HW100x100x6x8	



A-A

NOTES 说明:

1. THIS DRAWING IS APPLIED TO OPERATION PLATFORM. THE LENGTH AND WIDTH OF THE PLATFORM ARE NO MORE THAN 3m, THE HEIGHT IS NO MORE THAN 2.5m.

本图适用于长(Lx)和宽(Ly)不大于3m,且高(Lz)不大于2.5m的操作平台。

2.THE STANDARD VALUE OF LIVE LOAD OF THE PLATFORM ON THIS DRAWING IS 2.5kN/m<sup>2</sup>.

本图中平台设计活荷载标准值: 2.5kN/m<sup>2</sup>。

3.THE SPACING OF SECONDARY BEAMS IS NO MORE THAN 1.2m.

次梁间距应不大于1.2m。

5. THE COLUMN BASE SHALL BE HINGED CONNECTIONS. ALL BEAM-COLUMN CONNECTIONS SHALL BE RIGID CONNECTIONS. THE COLUMN BASE PLATE SHALL BE DESIGNED ACCORDING TO THE ACTUAL SITUATION.

本图中平台柱脚按铰接设计,梁柱按刚接设计。柱脚底板应根据实际情况进行设计。

6.THE STEEL COLUMN SHOULD BE RELIABLY CONNECTED WITH FOUNDATION OR STRUCTURE IN THIS DRAWINGS.

本图中平台柱脚应与基础或结构有可靠连接。

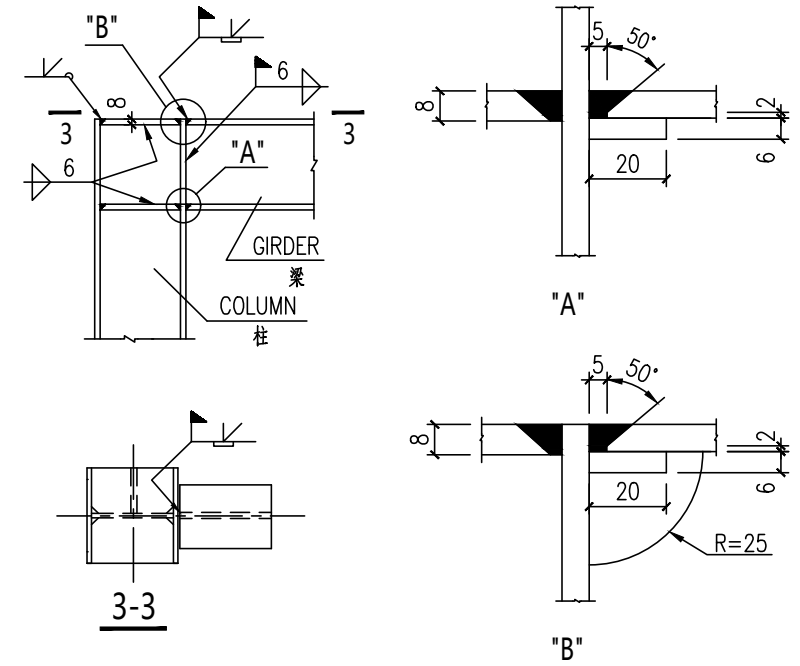
7. DETAILS TYPE - PF"1" ~ PF"3" ARE ONLY FOR THE CONNECTION OF THE PLATFORM ON THIS DRAWING. THESE DETAILS ARE NOT APPLIED TO OTHER STRUCTURES.

节点详图 TYPE - PF"1" ~ PF"3" 仅适用于本图中平台连接,不适用于其它结构。

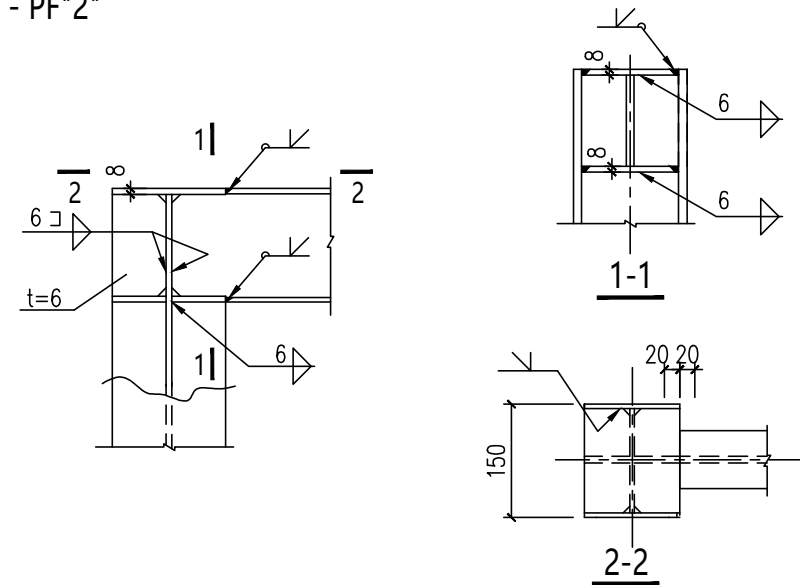
8. WHEN PF-(I) IS NOT LOCATED IN ENCLOSED STRUCTURE, THE DISTANCE BETWEEN THE EDGE OF THE PLATFORM (LADDER) AND THE EDGE OF ITS SUPPORT PLATFORM SHOULD NOT BE LESS THAN 1.0m; OTHERWISE, ADDITIONAL PROTECTIVE MEASURES SHALL BE TAKEN.

当平台类型 I 设置在非封闭结构上时,其平台边缘(直爬梯)距支撑结构平台边缘的最小距离应不小于1.0m;否则应设置附加防护措施。

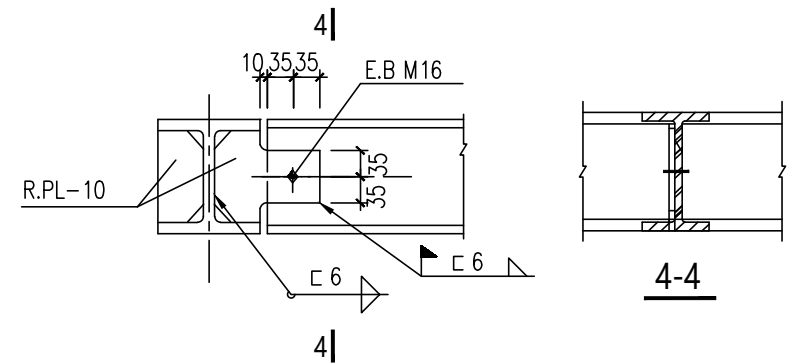
TYPE - PF"1"



TYPE - PF"2"



TYPE-PF "3"



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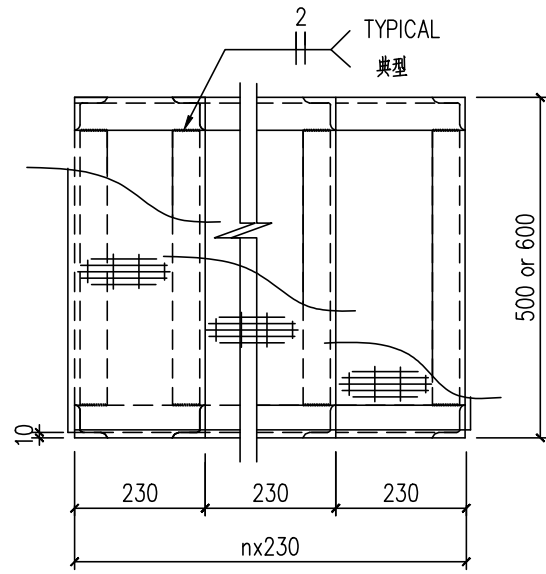
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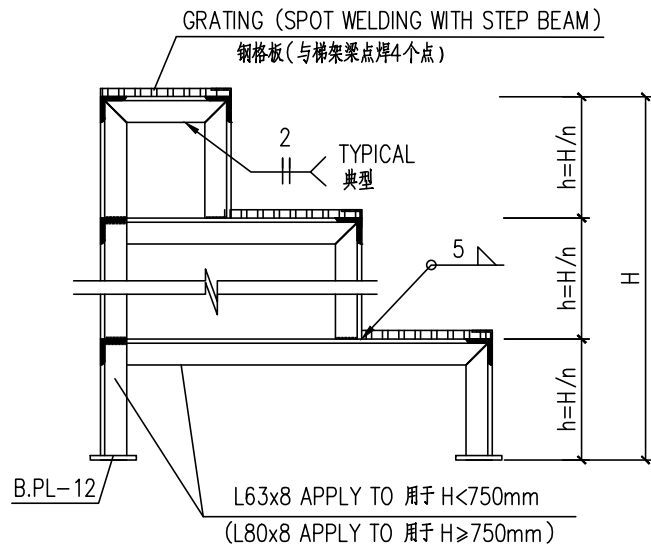
小平台类型 I  
TYPE PF-(I)

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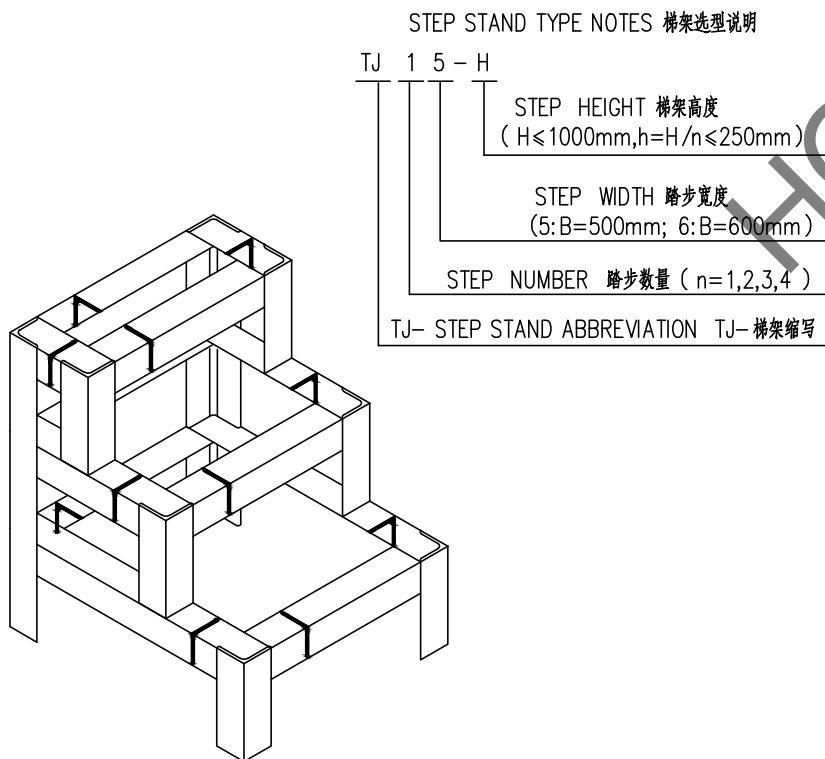
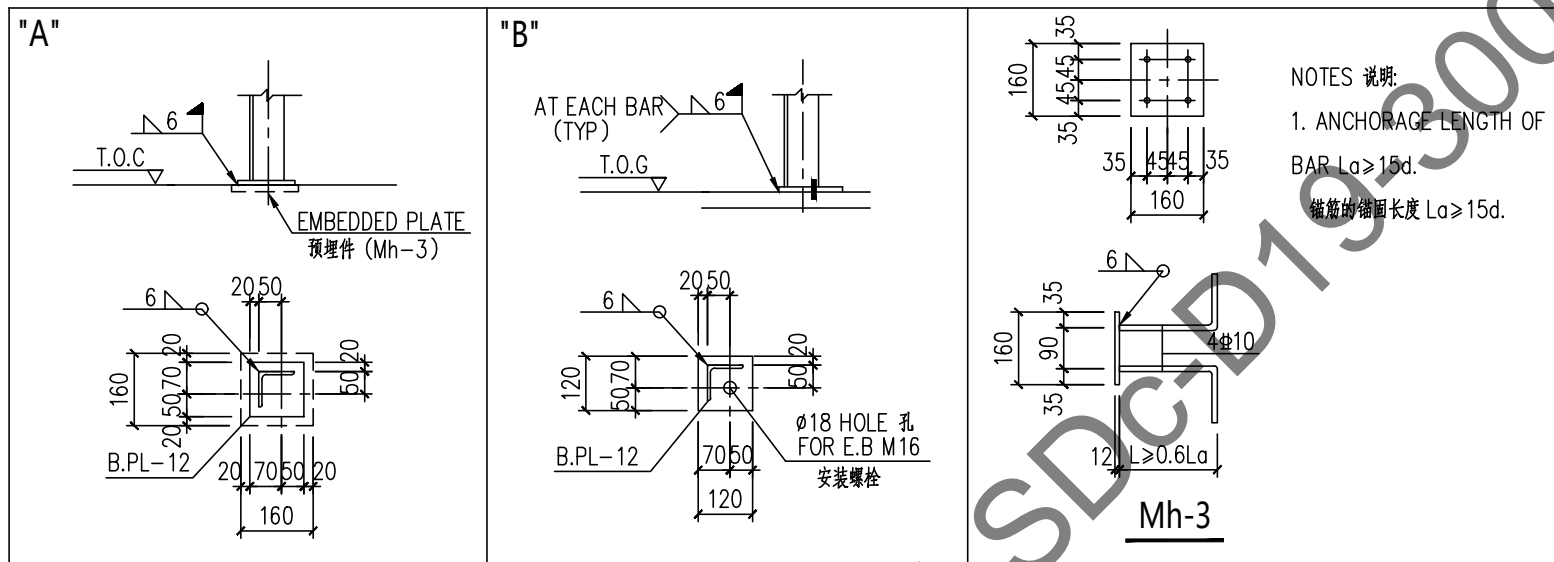
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版次	日期	设计	审核	审核
REV	DATE	DESIGN	CHECK	DISC APP.
		曹力慧	易宝生 姜晨玉	郑建华



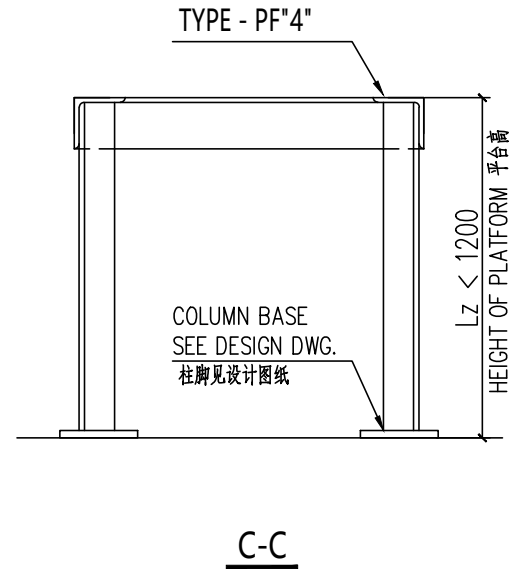
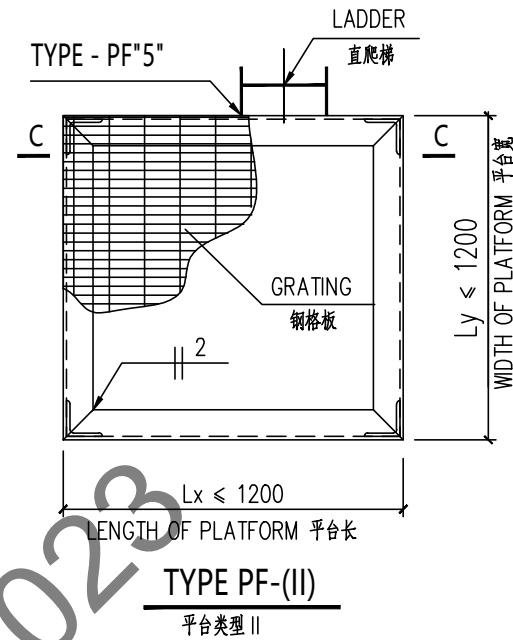
梯架详图  
STEP STAND DETAIL



COLUMN BASES TYPE FOR IMMOVEABLE STEP STAND 非可移动梯架柱脚类型



NOTES 说明:  
1. TREAD GRATING SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH YB/T4001.3-2020 GRATING SELECTION REFER TO "DETAIL OF TREAD" OF THE STANDARD DRAWING, BOTH ENDS OF THE SIDE PANELS SHALL ADOPT THE SAME BEARING FLAT STEEL EDGING.  
踏步格栅板应根据YB/T4001.3-2020采用热浸镀锌, 格栅板选型参见本套标准图"踏步详图", 其中两端边板采用与承载扁钢相同的扁钢包边。  
2. ALL CUT CORNERS, SIDES AND EXPOSED SURFACES OF WELDING SHALL BE GROUND SMOOTH  
所有切割面焊接表面均应磨光。  
3. WHEN IT IS NOT LOCATED IN ENCLOSED STRUCTURE, THE DISTANCE BETWEEN THE EDGE OF STEP STAND AND THE EDGE OF ITS SUPPORT PLATFORM SHOULD NOT BE LESS THAN 1.0m; OTHERWISE, ADDITIONAL PROTECTIVE MEASURES SHALL BE TAKEN.  
当梯架设置在非封闭结构上时, 其平台边缘距支撑结构平台边缘的最小距离应不小于1.0m; 否则应设置附加防护措施。



PF-(II) SECTION TABLE 平台类型 II 截面选用表

HEIGHT (Lz) OF PLATFORM (mm) 平台高 Lz (mm)	SECTION OF COLUMN 柱截面	LENGTH (Lx), WIDTH (Ly) OF PLATFORM (mm) 平台长 Lx, 平台宽 Ly (mm)	SECTION OF BEAM 梁截面
800 ≤ Lz < 1200	L80x8	800 ≤ Lx, Ly ≤ 1200	L80x8
Lz < 800	L63x8	Lx, Ly < 800	L63x8

TYPE - PF"4"	TYPE - PF"5"

NOTES 说明:  
1. PF-(II) IS ONLY FOR THE SMALL OPERATION PLATFORM WITH LADDER OR STEP STAND, AND NO HANDRAIL.  
平台类型 II 仅用于小型操作平台, 可设直爬梯梯架, 不宜设置栏杆。  
2. PF-(II) IS ONLY FOR THE SMALL OPERATION PLATFORM WITH THE HEIGHT LESS THAN 1.2m. WHEN IT IS NOT LOCATED IN ENCLOSED STRUCTURE, THE DISTANCE BETWEEN THE EDGE OF THE PLATFORM AND THE EDGE OF ITS SUPPORT PLATFORM SHOULD NOT BE LESS THAN 1.0m; OTHERWISE, ADDITIONAL PROTECTIVE MEASURES SHALL BE TAKEN.  
平台类型 I 适用于高度小于1.2m, 当设置在非封闭结构上时, 其平台边缘距

支撑结构平台边缘的最小距离应不小于1.0m; 否则应设置附加防护措施。  
3. THE STANDARD VALUE OF LIVE LOAD OF THE PLATFORM ON THIS DRAWING IS 2.5kN/m<sup>2</sup>.  
本图中平台设计活荷载标准值: 2.5kN/m<sup>2</sup>.  
4. DETAILS TYPE - PF"4" ~ PF"5" ARE ONLY FOR THE CONNECTION OF THE PLATFORM ON THIS DRAWING. THESE DETAILS ARE NOT APPLIED TO OTHER STRUCTURES.  
节点详图 TYPE - PF"4" ~ PF"5" 仅适用于本图中平台连接, 不适用于其它结构。  
5. OTHER NOTES SEE PAGE 48.  
其它说明见第48页。



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小平台类型 II; 梯架详图  
TYPE PF-(II); DETAIL OF STEP STAND