



Founded in 1965, Hexa Consulting Engineers has been providing technical consultancies and engineering services in civil and structural engineering industry for the past half – century.

- Hexa is certainly recognized as a leading company in **bridge engineering** specialty.
- Towards development of Iran, Hexa has started its participation in national **railway** projects since 1982 and in **urban railways** industry since 1986. Hexa has also successfully collaborated in EPC consortiums providing engineering and construction management services.

HEXA Offices

- Head Office / 110 Employees
- Provincial Offices (10) / 217 Employees

Total Employees : 327



- **Main Specialties**

- **Structural and Bridge Engineering**
- **Transportation Engineering**
 - Railways & Urban Railways
 - Roads & Interchanges

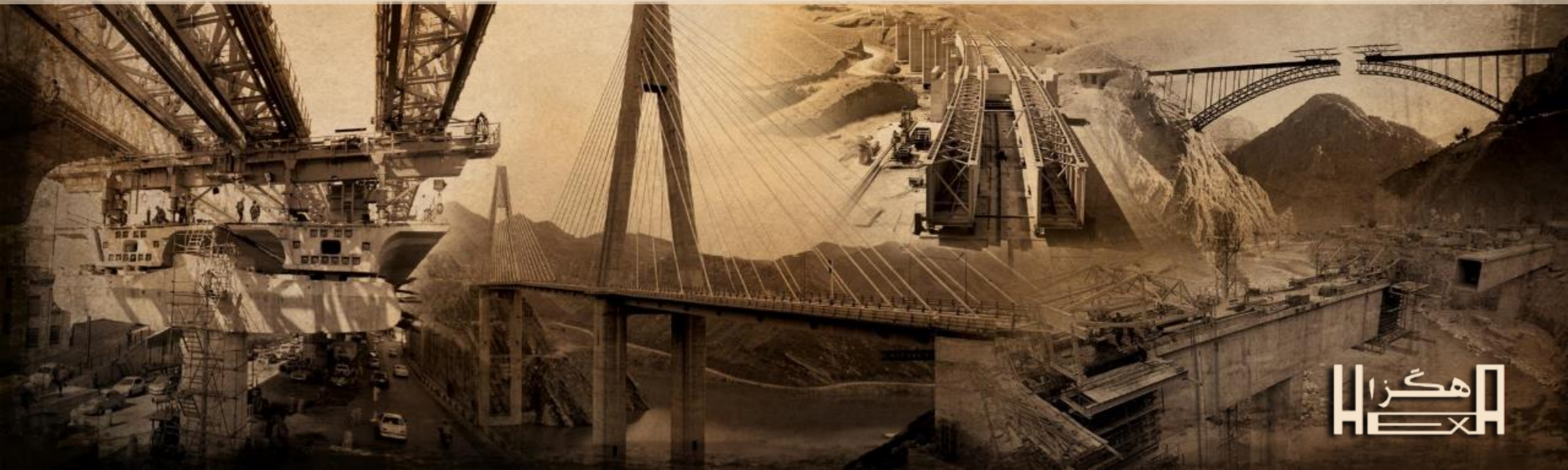
- Initial consultations
- Feasibility studies
- Conceptual and basic design
- Detailed design
- Design check services
- Construction supervision and engineering services
- Providing MC “Managing Contractor” services



Structural and Bridges Engineering



- Leading Structural and bridge engineering consultancy services in Iran
- Design & Supervision of first special bridges in Iran
- **Over 200 major bridges and interchanges**
- Variety of bridge types and construction methods in four decades
- Longest bridges and spans in different structural categories



The First Special Bridges in Iran

(Design & Supervision by HEXA)

هگزا
HEXA



| Bridge Name | Date of Completion | Structural Category | Maximum Length of Span |
|-------------------------------|--------------------|--|------------------------|
| Mond Bridge | 1969 | Pre-stressed precast beams and cast-in-place slab | 40 m |
| Satarkhan Bidge | 1972 | pre-stressed precast concrete box girders | 45 m |
| Sadr-Modares Interchange | 1973 | Cast-in-place pre-stressed voided RC slab | 26 m |
| 2 nd Dezful Bridge | 1976 | Cast-in-place pre-stressed concrete box girders | 65 m |
| Valiasr-Chamran Bridge | 1997 | Cable-stayed bridge with single row cables and RC slab | 52 m |
| Yadegare Imam Bridge | 1998 | pre-stressed concrete beams | 32 m |
| Qom Monorail | Being constructed | Pre-stressed concrete frame | 39 m |

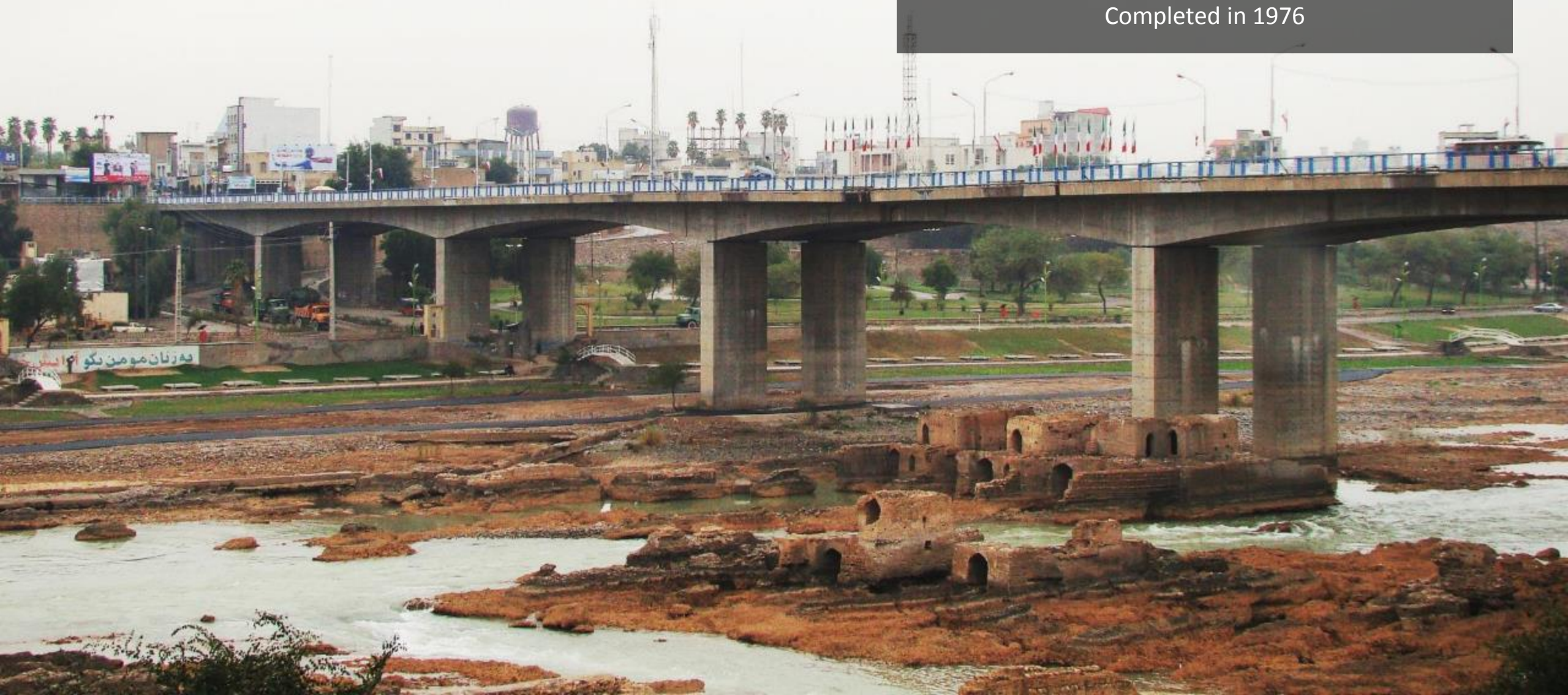


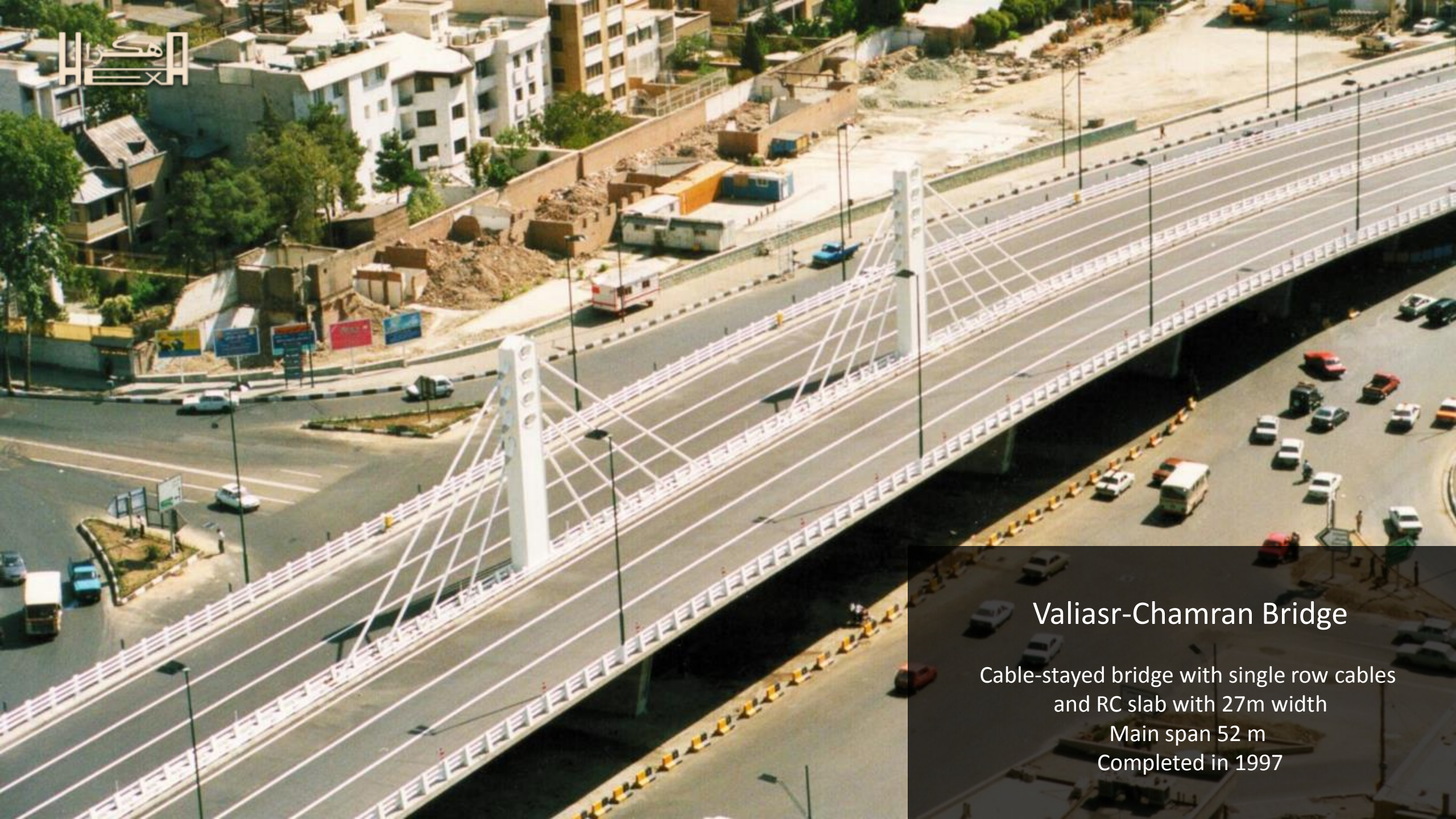
2nd Dezful Bridge

Cast-in-place pre-stressed concrete box girders built
by balanced cantilever method

Span: Up to 65 m

Completed in 1976






Valiasr-Chamran Bridge

Cable-stayed bridge with single row cables
and RC slab with 27m width

Main span 52 m

Completed in 1997



Yadegare Imam Bridge

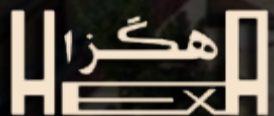
The first elevated expressway in Iran

precast pre-stressed concrete beams

Length of Bridge 2 km

Span: Up to 32m

Completed in 1998





Qom Monorail

7km length of bridge
Pre-stressed concrete frame
Span: Up to 39m
Being constructed

هگزاه



Special Bridges

Longest bridges and spans in different structural categories

(Design & Supervision by HEXA)



Lali Bridge

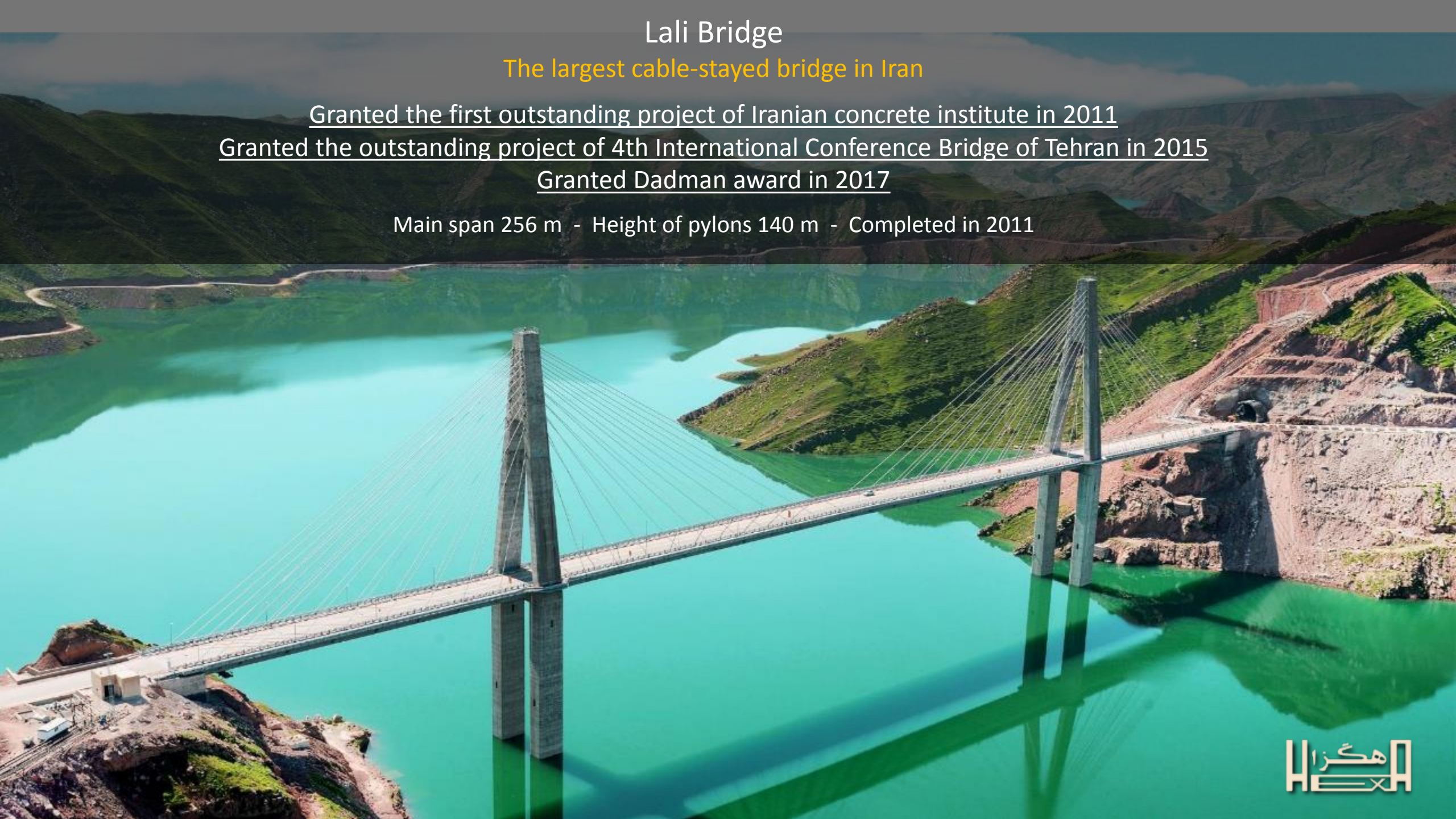
The largest cable-stayed bridge in Iran

Granted the first outstanding project of Iranian concrete institute in 2011

Granted the outstanding project of 4th International Conference Bridge of Tehran in 2015

Granted Dadman award in 2017

Main span 256 m - Height of pylons 140 m - Completed in 2011



The 8th Ahwaz Bridge

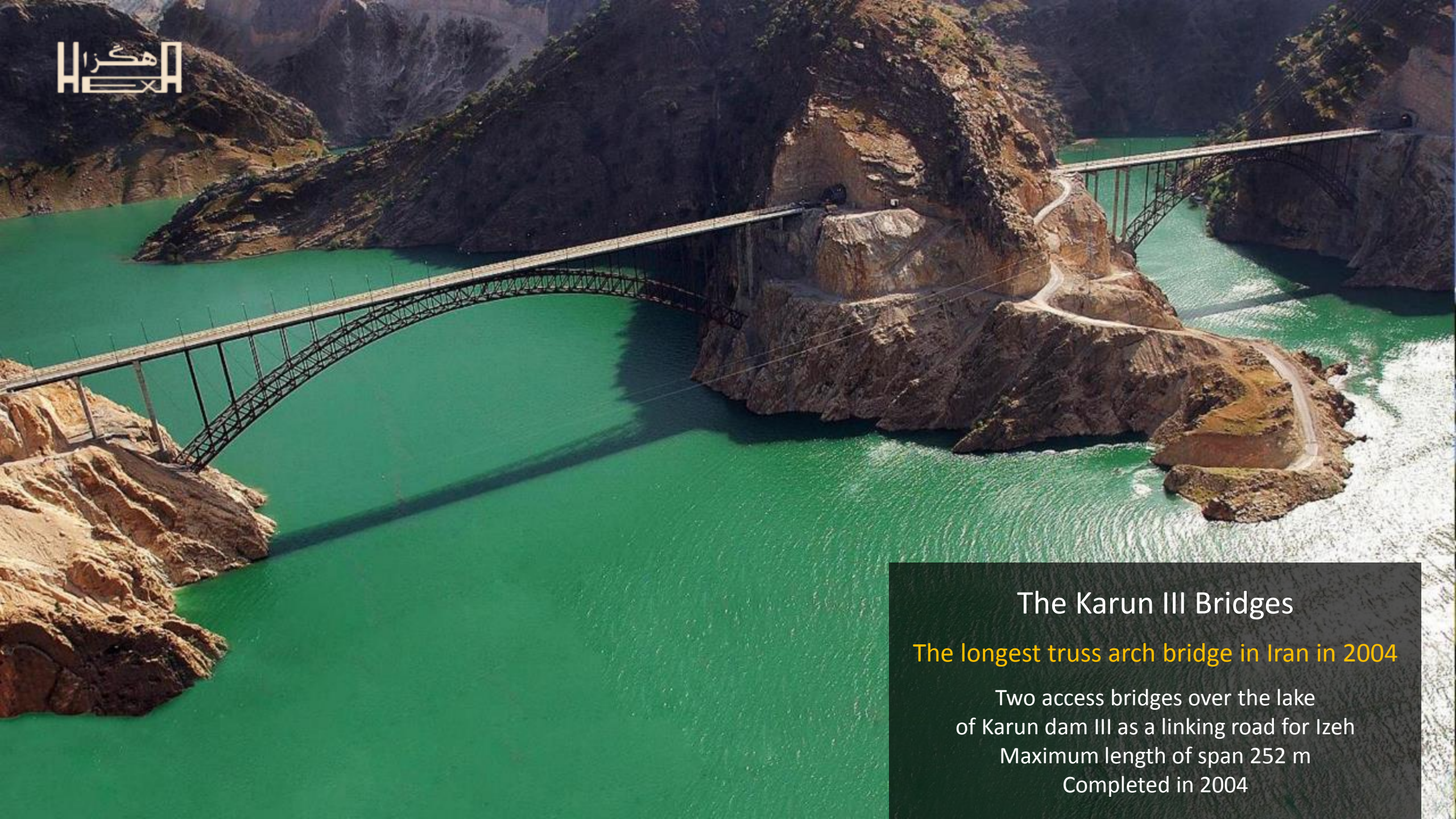
The Second largest cable-stayed bridge in Iran



Granted the outstanding project of Iranian society of steel structure in 2012

Main span 212 m - Completed in 2011





The Karun III Bridges

The longest truss arch bridge in Iran in 2004

Two access bridges over the lake
of Karun dam III as a linking road for Izeh
Maximum length of span 252 m
Completed in 2004

The 7th Ahwaz Bridge

The longest span of RC box girder bridges in Iran

Granted the first outstanding project of Iranian concrete institute in 2002

Main span 140 m - Completed in 1998





Karun IV Bridge

The longest truss arch bridge in Iran

Granted the first outstanding project
Iranian Society
of Steel Structures in 2013

Truss arch bridge with deck over the arch
constructed by cantilever method

Span 300 m

Completed in 2012





9th Ahwaz Bridge

The longest span for pre-stressed box girders bridge in Iran

Cast-in-place pre-stressed concrete box girders built by balanced cantilever method

Main span 150 m - Being Constructed



Tale Zang Railway Bridge

The longest span of railway RC box girder bridges in Iran

Granted the first outstanding project of Iranian concrete institute in 2016

Cast-in-place pre-stressed concrete box girders built by balanced cantilever method
Main span 107 m - Completed in 2012





Valley-crossing bridges of the Mianeh-Bostanabad-Tabriz railway project

The longest span of Valley-crossing bridges with incremental launching method in Iran

Granted the outstanding project of Iranian society of steel structure in 2015

RC piers constructed by sliding formwork.

Double steel box girders with RC slab constructed by state-of-the-art incremental launching

Maximum length of span 60 m - Being constructed



Sebalootak Bridge
The longest span for cable-stayed bridge
in Iran

Main span 260 m
Being constructed





Over 50 bridges and interchanges in **Tehran**





Seyed Khandan Bridge

Reinforced concrete pre-stressed precast
box girders

Completed in 1977



Sadr Highway Bridge

Granted the most outstanding project of Iranian Concrete Institute in 2015
precast pre-stressed concrete box girders and steel box girders for some ramps

Length of Bridge 6 km

The segmental bridge ramps will be precast pre-stressed balanced cantilever and main bridge erected with parallel launching gantry infill practice with span by span method

Completed in 2013



Jenah Interchange

Variety of cast-in-place pre-stressed concrete box girder
built by cantilever method Being constructed

Span: Up to 40 m

Completed in 2013

Abrisham Bridge

Cable-Stayed bridge consisting of steel inclined pylon and composite deck consisting of steel box girders and RC slab

Main span 67 m

Completed in 2009





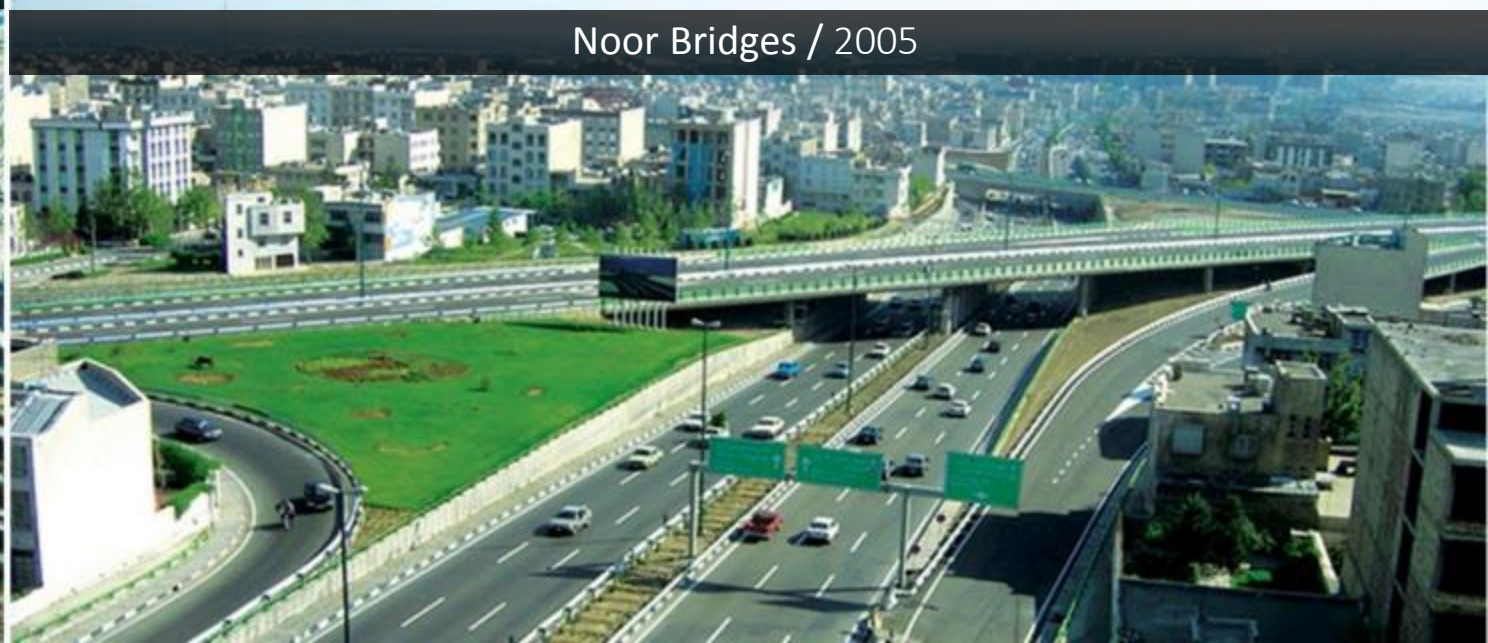
Fajr Bridges / 1993



Afsarieh Bridges / 1993



Karvansara Sangi Interchange / Being constructed



Noor Bridges / 2005



Over 50 River Crossing Bridges in **Khoozestan**



Mared Bridge

through arch bridge with deck below
the arch with composite deck

Main span 144 m
Completed in 2005





Karun IV Bridge

Granted the first outstanding project Iranian Society of Steel Structures in 2016

Cable-stayed bridge - Crossing oil and gas pipelines over the bridge
Main span 210 m - Being constructed

Nezamieh-Miyandasht Railway Bridge

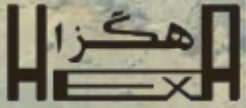
Combination of Cast-in-place pre-stressed
box girders for main spans
& precast pre-stressed beams
Main span 70 m
Completed in 2009





Over 50 bridges and interchanges in **Isfahan**





Defae Moghadas Bridges

Outstanding project of Iranian concrete institute (ICI)
in 2005

Isfahan south-east four level interchange in Isfahan
Completed in 2004

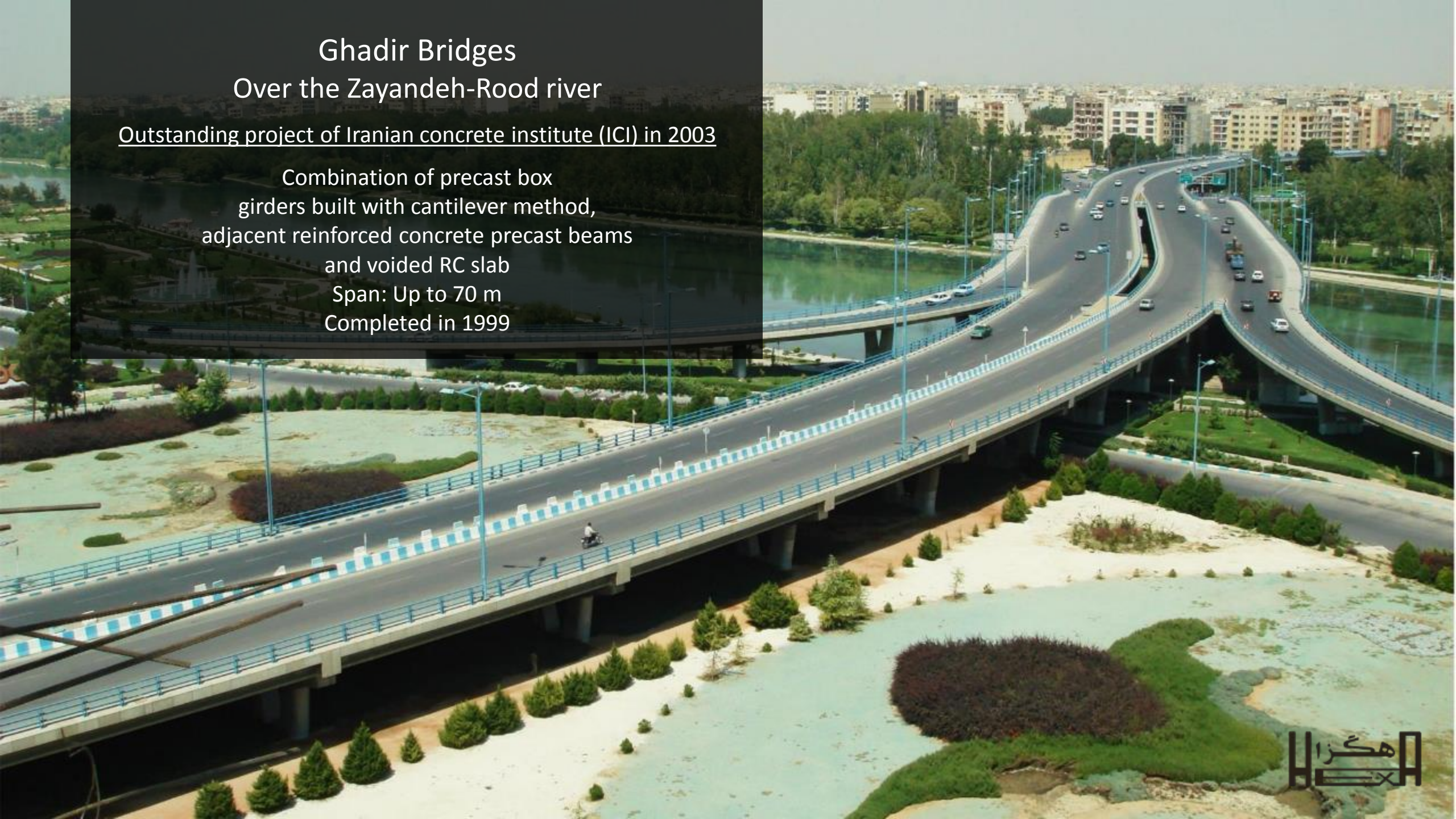


Ghadir Bridges

Over the Zayandeh-Rood river

Outstanding project of Iranian concrete institute (ICI) in 2003

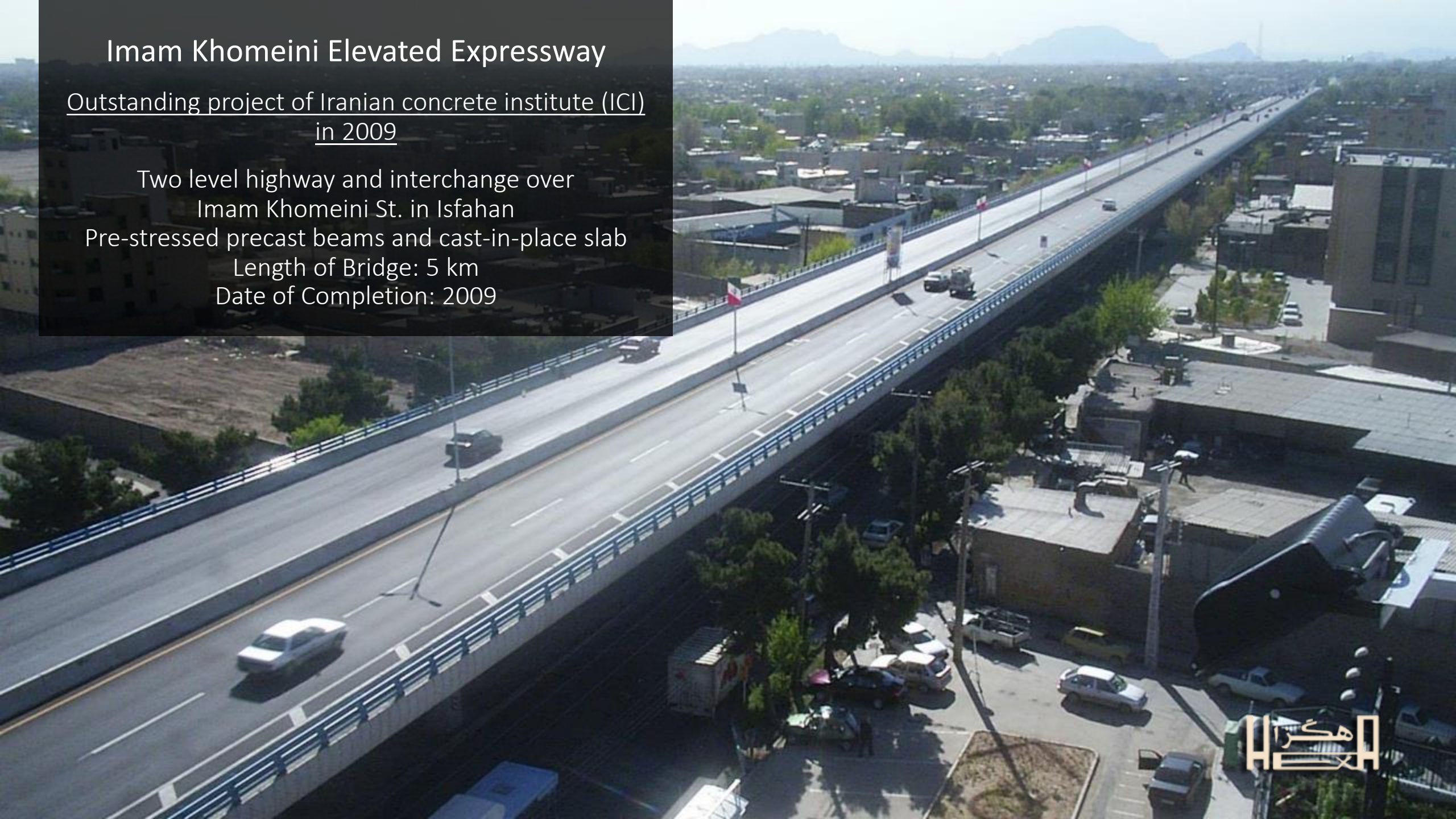
Combination of precast box
girders built with cantilever method,
adjacent reinforced concrete precast beams
and voided RC slab
Span: Up to 70 m
Completed in 1999



Imam Khomeini Elevated Expressway

Outstanding project of Iranian concrete institute (ICI)
in 2009

Two level highway and interchange over
Imam Khomeini St. in Isfahan
Pre-stressed precast beams and cast-in-place slab
Length of Bridge: 5 km
Date of Completion: 2009





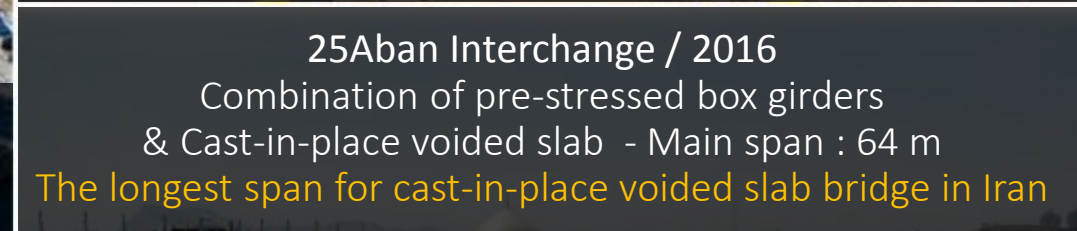
Esteghlal Square / 2017

Combination of precast pre-stressed box girders & Cast-in-place voided slab
Longest span : 55 m



Ghorbanali Arab Interchange / 2009

Cast-in-place pre-stressed slab in middle spans &
Cast-in-place voided slab in other span for overpass bridge
& Cast-in-place voided slab for underpass



25Aban Interchange / 2016

Combination of pre-stressed box girders
& Cast-in-place voided slab - Main span : 64 m
The longest span for cast-in-place voided slab bridge in Iran



Vahid Bridge / 1976 & Bridge Widening / 2007





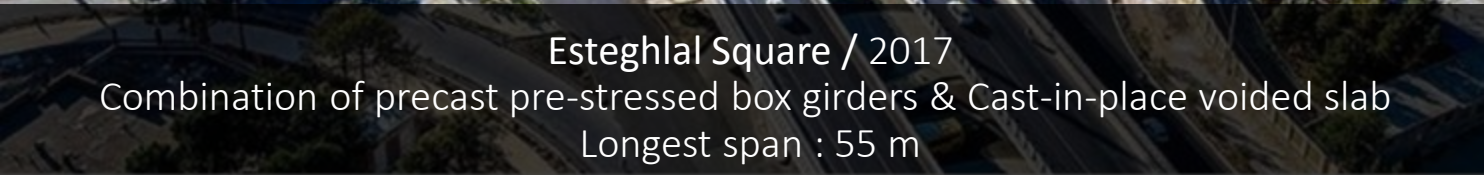
Esteghlal Square / 2017

Combination of precast pre-stressed box girders & Cast-in-place voided slab
Longest span : 55 m



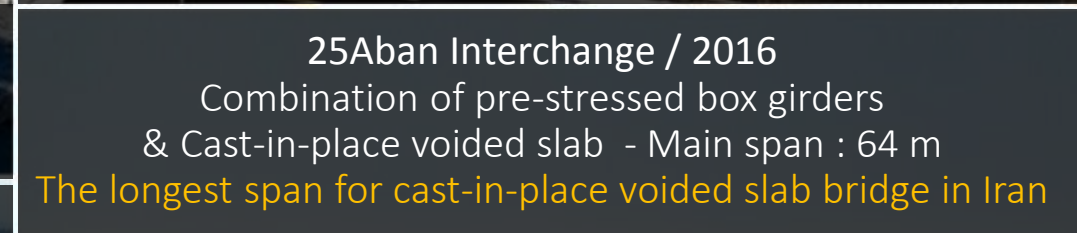
Chamran Overpass Bridges / 2016

Cast-in-situ pre-stressed concrete box girder built by
balanced cantilever method
Length of Bridge: 330 m for each bridge



Imam Khomeini Elevated Expressway / Length of Bridge: 5 km / 2009

Outstanding project of Iranian concrete institute (ICI) in 2009



25Aban Interchange / 2016

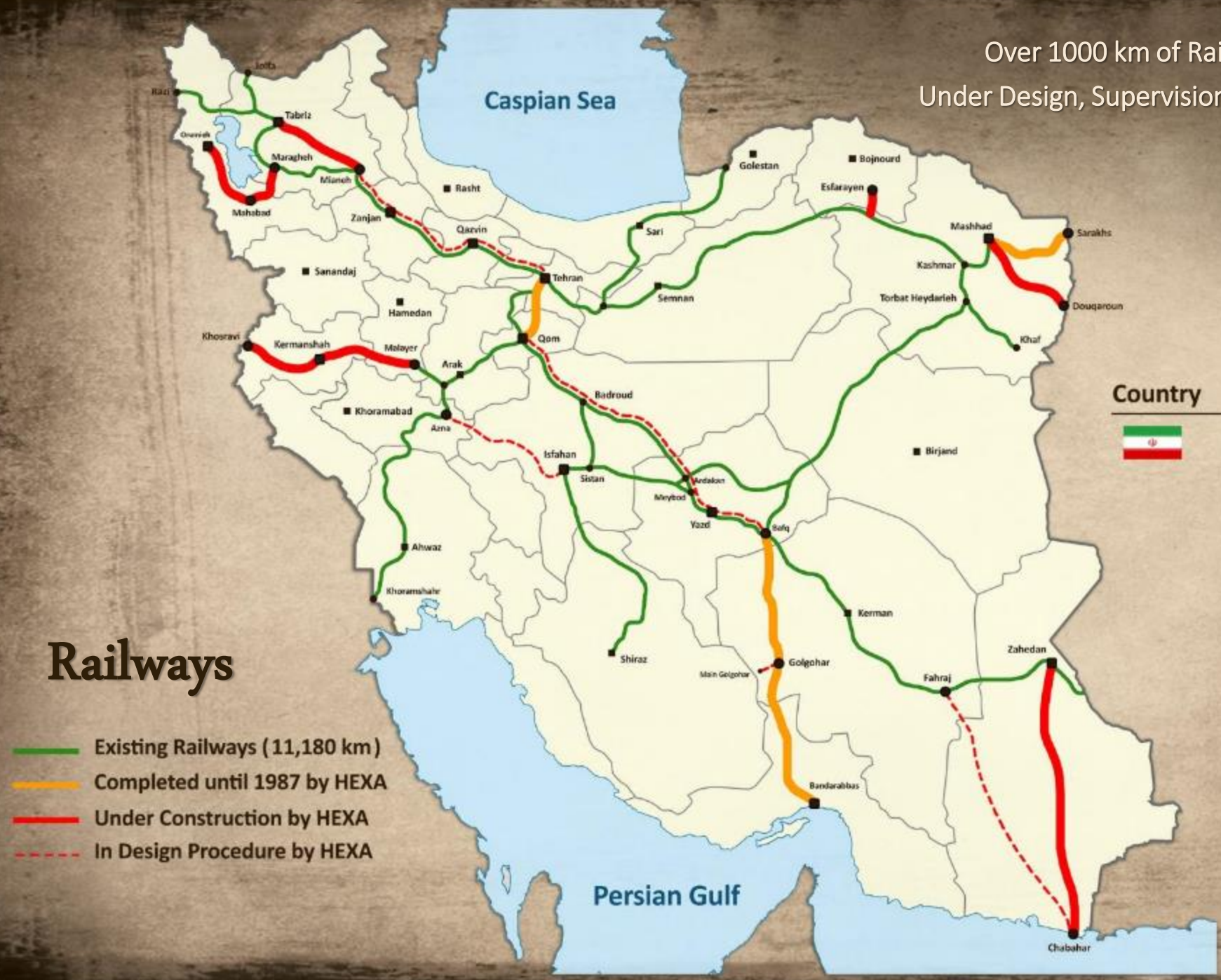
Combination of pre-stressed box girders
& Cast-in-place voided slab - Main span : 64 m
The longest span for cast-in-place voided slab bridge in Iran



Railways



Over 1000 km of Railway Projects
Under Design, Supervision and Management



| Country | Area (km ²) | Country | Area (km ²) |
|---|-------------------------|---|-------------------------|
|  | 1,648,000 |  | 643,801 |
| | |  | 505,992 |
| | |  | 357,168 |
| | |  | 130,395 |

Railways

- Existing Railways (11,180 km)
- Completed until 1987 by HEXA
- Under Construction by HEXA
- In Design Procedure by HEXA

Bafq-Bandar Abbas Railway

(Lot 11)

Length of project: 50 km

The first railway project
after Islamic revolution of Iran
Completed in 1994

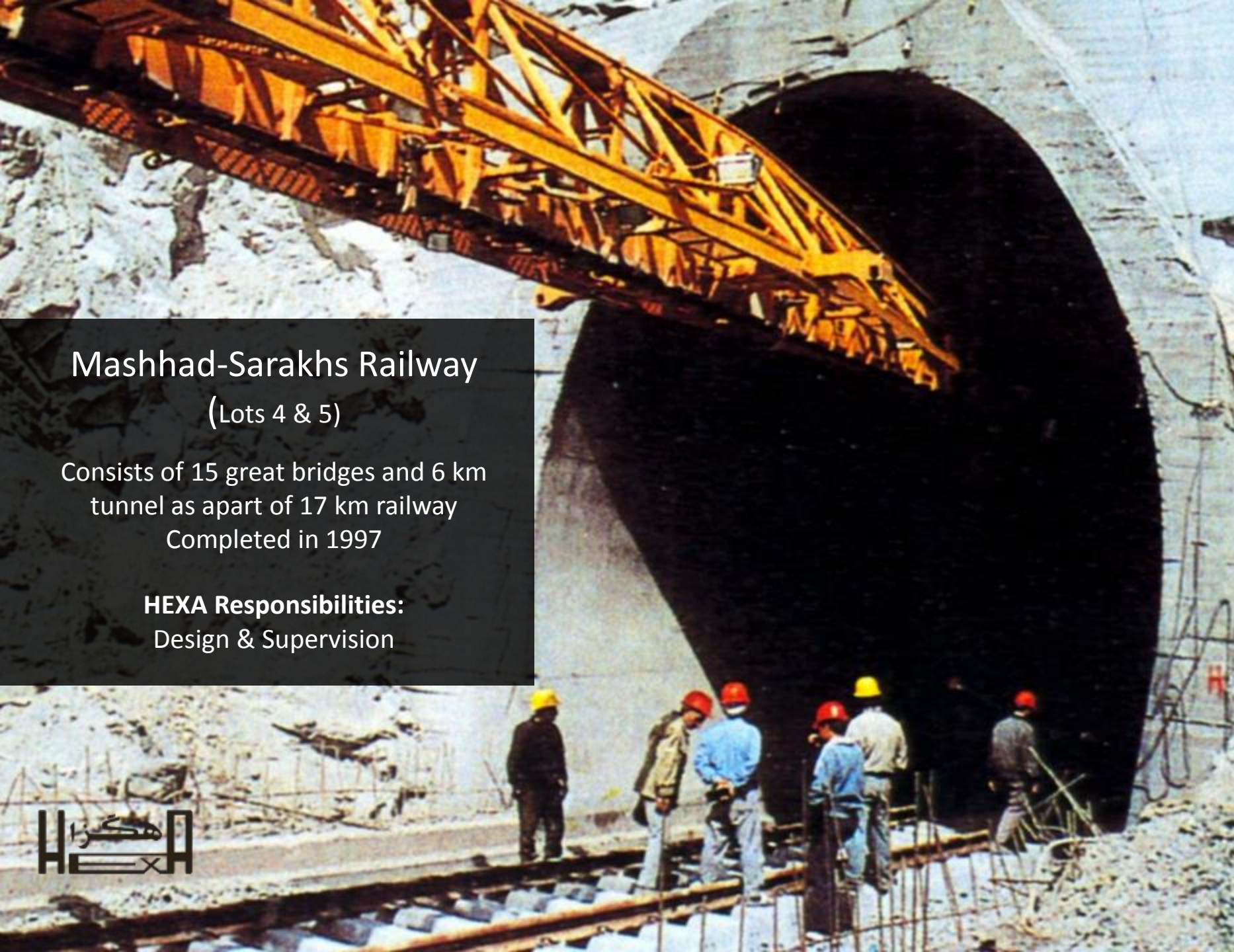
HEXA Responsibilities:

Design & Supervision

Mashhad-Sarakhs Railway (Lots 4 & 5)

Consists of 15 great bridges and 6 km
tunnel as apart of 17 km railway
Completed in 1997

HEXA Responsibilities:
Design & Supervision





Mianeh-Tabriz Railway
(Lots 2 , 3 & 10/A)
Length of project: 42 km
Consists of 8 great bridges , 3 tunnels and 1 station
Being constructed



HEXA Responsibilities: Design & Supervision





West Railway (Arak-Kermanshah Railway)

Length of project: 112 km
Consists of 10 great bridges,
5 tunnels & 8 stations
Being constructed

HEXA Responsibilities:
Design & Supervision



Maragheh-Orumiyeh Railway (Lots 1, 2 & 3)

Length of project: 63 km
Consists of 44 great bridges
Being constructed

HEXA Responsibilities: Design & Supervision





Chabahar-Zahedan Railway

(Lots 1 to 8)

Length of project: 610 km

Consists of 77 bridges, 20 tunnels & 30 stations

Being constructed

HEXA Responsibilities: Consultant of the client

- Management
- Design check
- Construction supervision



Kermanshah-Khosravi Railway

(Lots 1, 2 & 3)

Length of project: 263 km

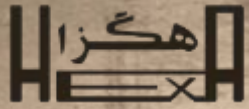
Consists of 35 great bridges, 11 tunnels & 12 stations
Being constructed

HEXA Responsibilities:

Consultant of the client

- Management
- Design check
- Construction supervision





Over 1000 km of Railway Projects Under Design, Supervision and Management

- Bafgh-Bandar Abbas Railway, Lot 11 / **50 km** / 1994 (The first railway project after victory of Islamic revolution of Iran)
- Mashhad-Sarakhs Railway, Lots 4 and 5 / **17 km** / 15 great bridges and 6 km tunnel / 1997
- Tehran-Qom High Speed Twin Track Railway, Lots 1 to 5 / **90 km** / 11 great bridges and 4 stations / 1998
- Maragheh-Orumieh Railway, Lots 1 to 3 / **63 km** / 44 great bridges / Being constructed
- Mianeh-Bostanabad-Tabriz Railway, Lots 2, 3 & 10/A / **42 km** / 8 great bridges, 3 tunnels and a station / Being constructed
- West Railway / **112 km** / 10 great bridges, 5 tunnels and 8 stations / Being constructed
- Kermanshah-Khosravi Railway, Lots 1 to 3 / **263 km** / 35 great bridges, 11 tunnels and 12 stations / Being constructed
- Chabahar-Iranshahr-Zahedan Railway, Lots 1 to 10 / **610 km** / 77 bridges, 20 tunnels and 30 stations / Being constructed
- Esfarayen Railway, Lots 1 and 2 / **57 km** / 4 great bridges and a tunnel / Being constructed
- Dooqaroon Railway, Lot 1 / **44 km** / Being constructed
- Isfahan-Azna Railway, Lot 5 / **70 km** / 5 great bridges, 4 tunnels and 3 stations / Being constructed


Urban Railways




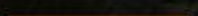
- ### Urban Railways
- Tehran Urban Railway
 - Mashhad Urban Railway
 - Isfahan Urban Railway
 - Tabriz Urban Railway
 - Shiraz Urban Railway
 - Karaj Urban Railway
 - Ahwaz Urban Railway
 - Rasht Urban Railway
 - Qom Urban Railway (Monorail)
 - Kermanshah Urban Railway (LRT)



Mashhad Urban Railway - Line 1

 Mashhad Urban Railway - Line 1

 Mashhad Urban Railway - Extension of Line 1

 HEXA in Mashhad Urban Railway - Line 1

Hexa's Responsibilities:

Tunnels and 12 Stations (Design & Supervision)

(Top-Down method using precast elements)



Isfahan Urban Railway - Line 1

Isfahan

- Isfahan Urban Railway - Line 1
- Isfahan Urban Railway - Extension of Line 1
- HEXA in Isfahan Urban Railway - Line 1
- HEXA in Isfahan Urban Railway Superstructure - Line 1

Hexa's Responsibilities:

Tunnels, Stations and Railway Superstructures (Design & Supervision)
(Cut & Cover, Top-Down)



Esteghlal Square

Qods Station

Beharestan Station

Golestan Station

Mofateh Station

Alkhani Station

Jaber Station

Kaveh Station (Isfahan Central Subway Station)

Chamran Station

Bahonar Station

Shohada Station

Takhti Station

Imam Hossein Station

Enghelab Station

Si-o-seh-pol Station

Shariati Station

Azadi Station

Daneshgah Station

Kargar Station

Imam Station

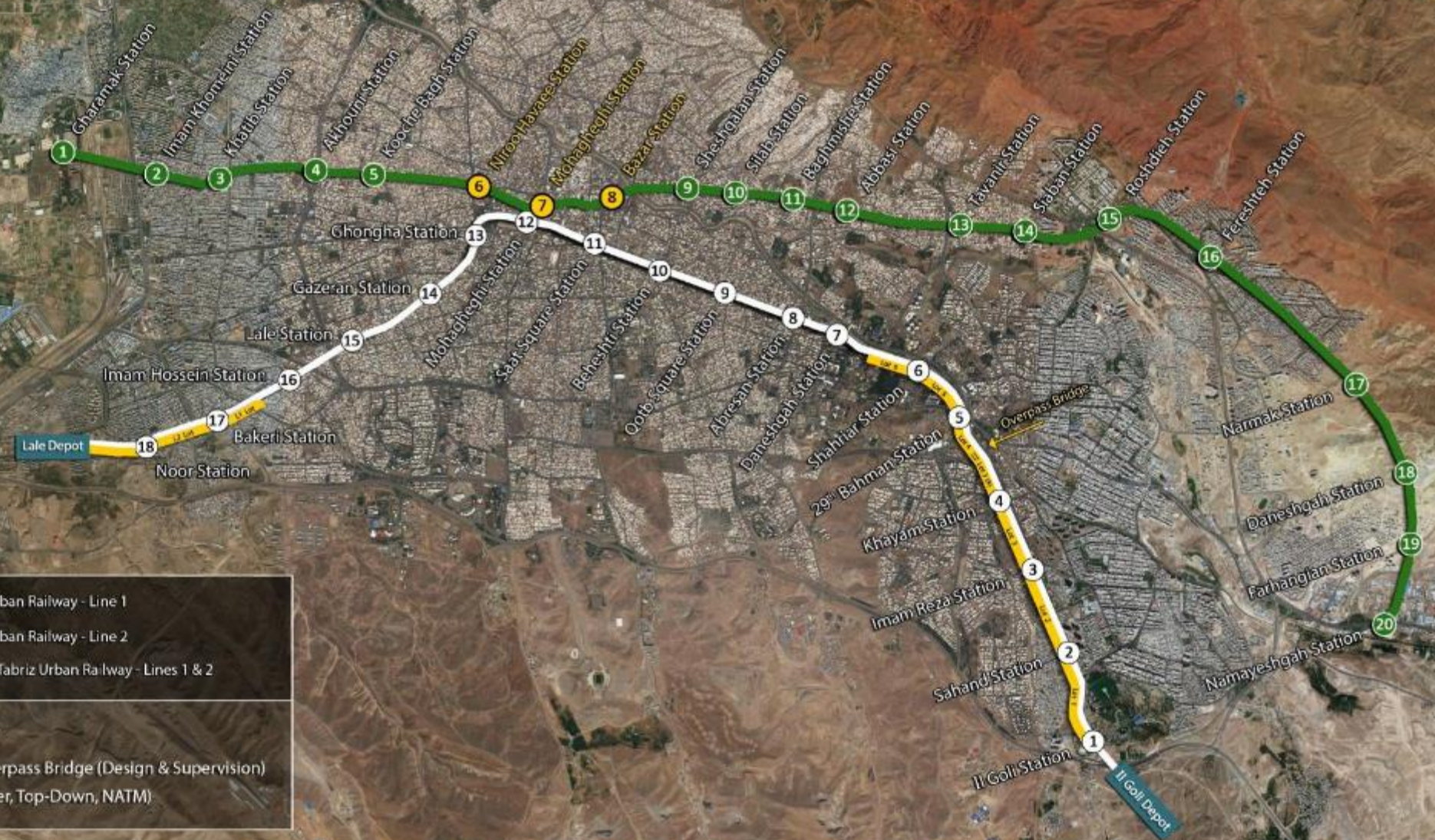
Defae Moghadas Station

Shiraz Urban Railway - Line 1





Tabriz



Tabriz Urban Railway - Line 1

Tabriz Urban Railway - Line 2

HEXA in Tabriz Urban Railway - Lines 1 & 2

Hexa's Responsibilities:

Tunnels, Stations & Overpass Bridge (Design & Supervision)

(Cut & Cover, Top-Down, NATM)



Tehran Urban Railway - Line 2 & 4

3 Stations of Tehran Metro
(Baharestan, mellat, Darvazeh shemiran)

(Cut & Cover for the central part
and traditional ribbing method for the external parts)

&

Tunnel & T6 Station of Line 6





Mashhad Urban Railway – Line 1

19.5 km (Tunnels and 10 stations)
(Top-Down method using precast elements)

Mashhad Urban Railway – Extension of Line 1

4.5 km (Tunnels and 2 Stations)
(Top-Down method using precast elements)



Mashhad Urban Railway – Line 3

3 Stations



Isfahan Urban Railway – Line 1

Tunnels, stations and railway superstructures
(Cut & Cover, Top-Down)

Isfahan Urban Railway – Extension of Line 1

5.5 km , Consists of 3 stations



Tabriz Urban Railway – Line 1 / Tunnels and Overpass bridge (Cut & Cover, Top-Down)

Tabriz Urban Railway – Line 2 / 3 Stations



Ahwaz Urban Railway – Line 1

24 stations and 7 crossovers
(Cut & Cover, Top-Down
in difficult geotechnical conditions beneath the
water table in permeable strata)



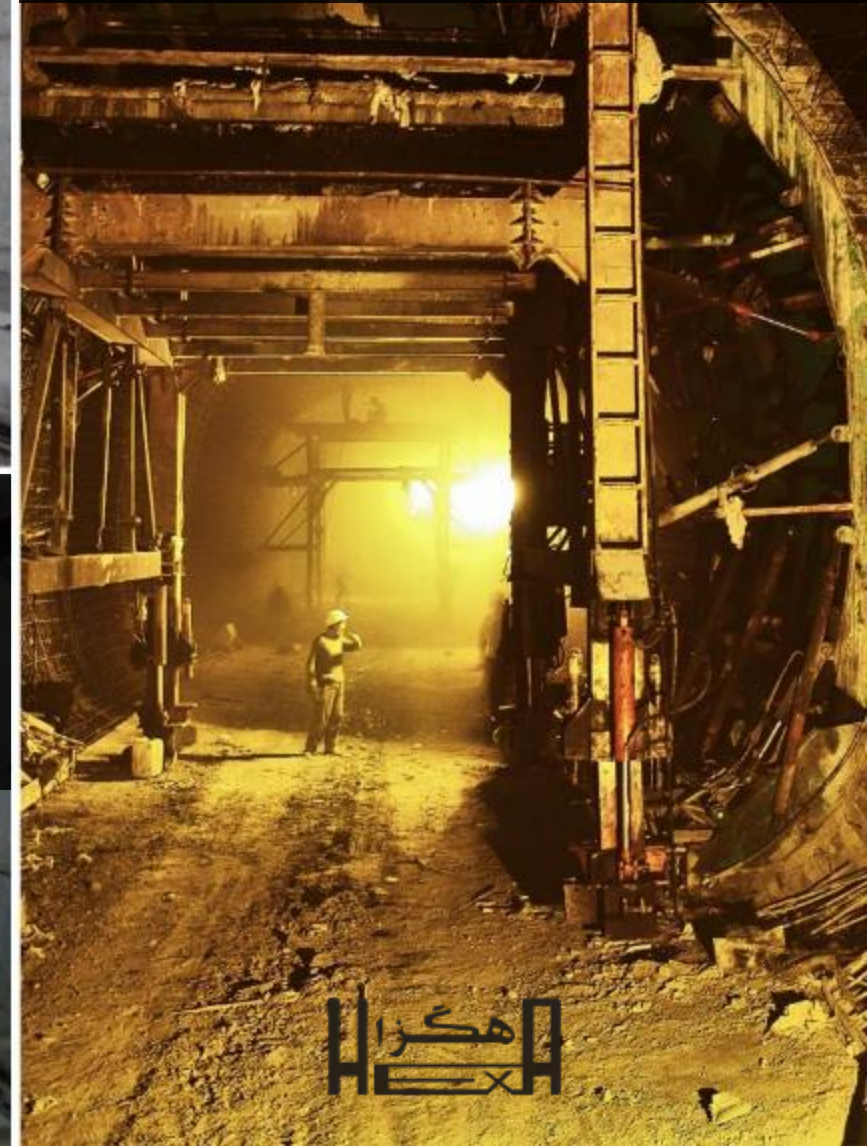
Shiraz Urban Railway – Line 1

Lots 6 , 7 / Lots A , B and D (8 km)
(Top-Down using both precast and
Cast-in-place elements, NATM)



Karaj Urban Railway – Line 2

25 km tunnel and 25 stations
(NATM & Steel braced cuts for entrances)



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Qom Monorail

Length of project: 7 km
(Pre-stressed concrete frame)

Span: Up to 39m

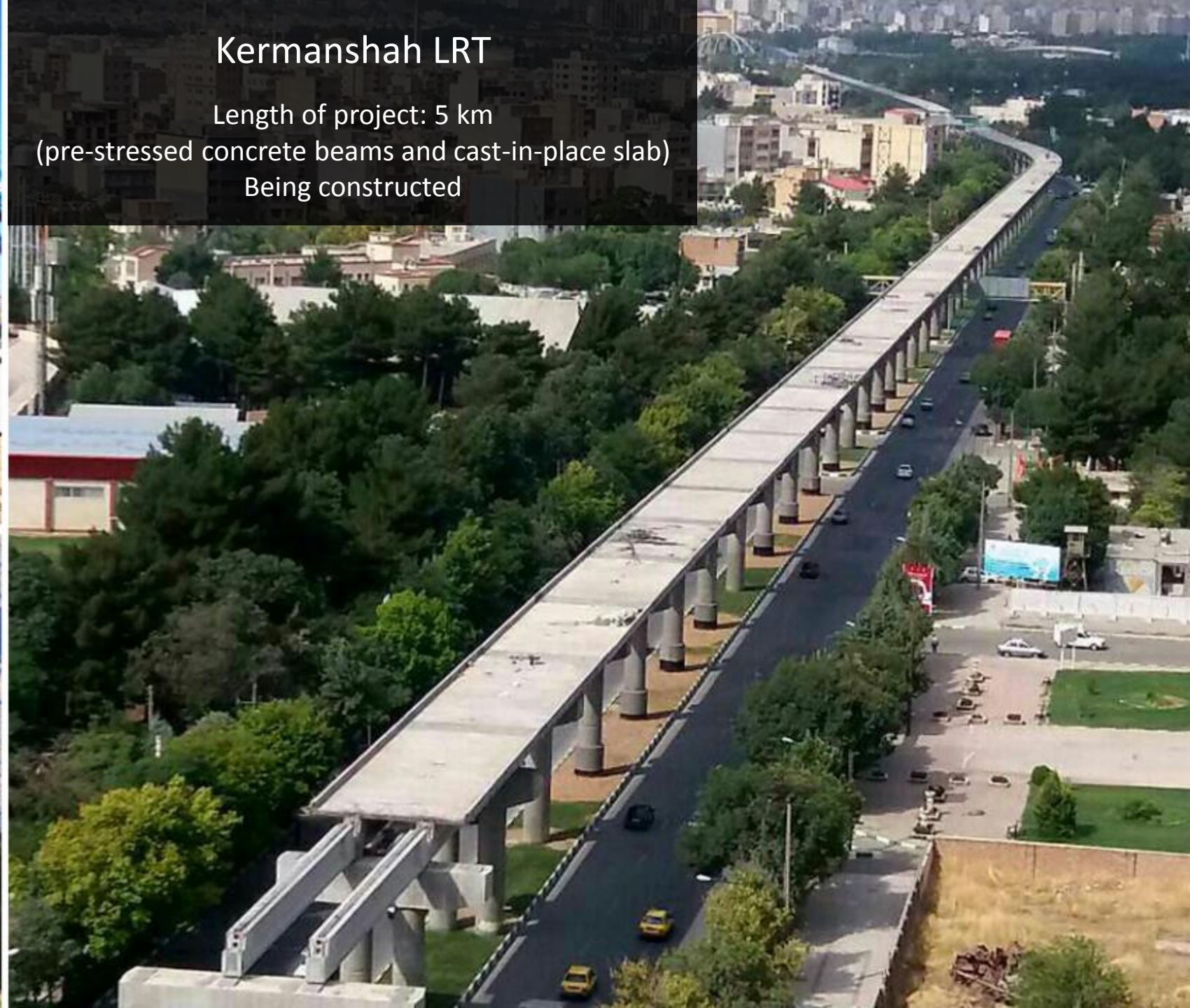
Being constructed

هنگزا
HEX



Kermanshah LRT

Length of project: 5 km
(pre-stressed concrete beams and cast-in-place slab)
Being constructed



Suburban Railways

(Electrical Trains)



Tehran-Mashhad Railway Electrification / 926 km





Tehran Suburban Railway

- Parand Suburban Railway / 20 km / 7 bridges and Parand station

Tabriz Suburban Railway

- Tabriz-Sahand Suburban Railway / 20 km

Isfahan Suburban Railways

- Isfahan-Phooladshahr-Zarinshahr Suburban Railway / 35 KM
- Isfahan-Najafabad Suburban Railway / 14 km
- Isfahan-Baharestan Suburban Railway Superstructure / 14 km



Development & Retrofit of Existing Railway Network





Converting level crossings of existing railway network to interchanges

Consultant of the Client
Up to 20 interchanges being constructed



Rehabilitation & Retrofitting of

- Ahwaz-Andimeshk railway bridges
- Islamshahr-Garqom railway bridges



Roads & Highways





Hemmat-Karaj Freeway (Lots 2 & 3)

Consists of 7 great bridges and a tunnel
Length of project 14.6 km
Being constructed

Saveh-Hamedan Freeway

Consists of 3 interchanges and Mazdaghan bridge
Length of project 175 km
Completed in 2007



Replacement Linking Roads of Masjed Soleyman–Lali

Consists of 4 tunnels and high trenches
Length of project 17 km
Completed in 2011

West & East Ring Roads of Kermanshah

Consists of 6 great bridges
Length of project 44 km
Being constructed



Potential Mutual Interests with International Companies

- Providing engineering services (basic and detail design etc.) for consulting / construction companies with lower costs – comparing to international fees
- Joining with consulting / construction companies for major projects in Iran



Thank you for your attention

HEXA Est. 1965
Consulting Engineers Co.