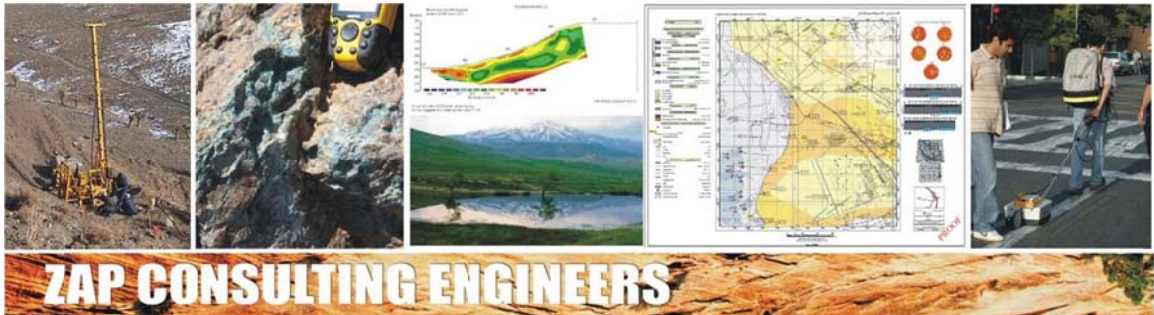




ZAP Consulting Engineers (ZAPCE)

Selected projects list

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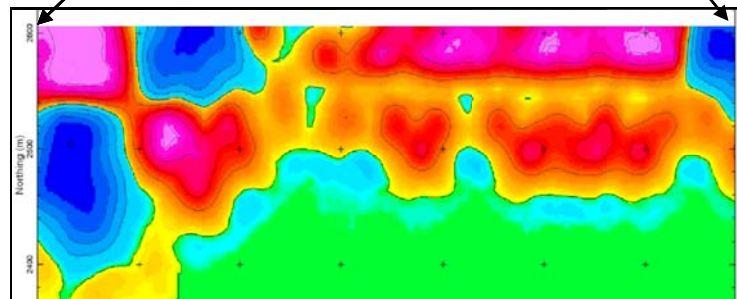
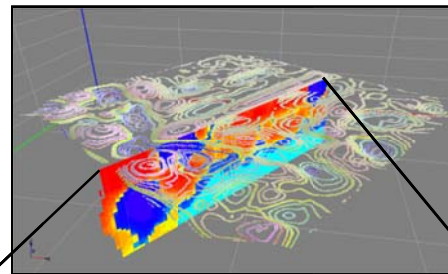
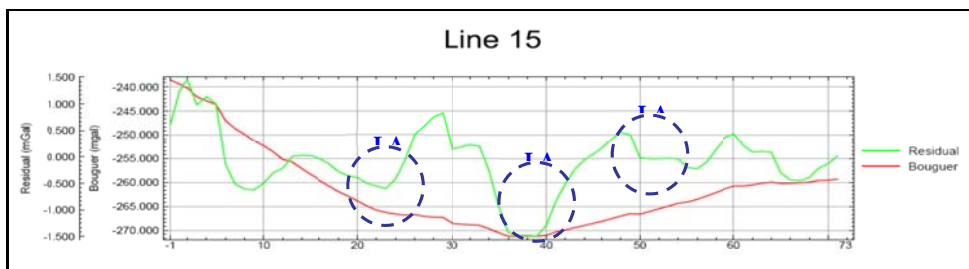
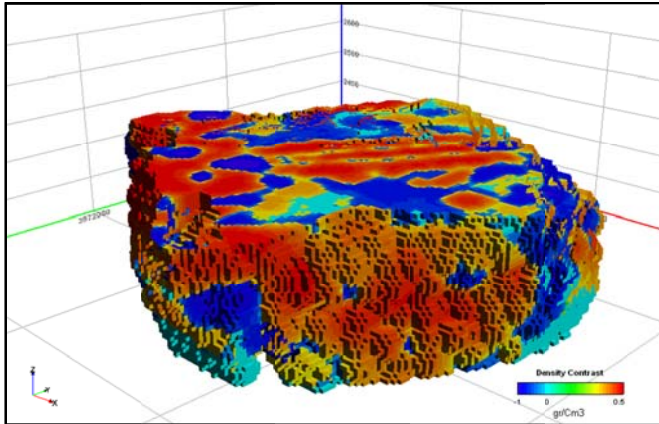
Tehran, Iran

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Geophysical investigations Gravimetric method

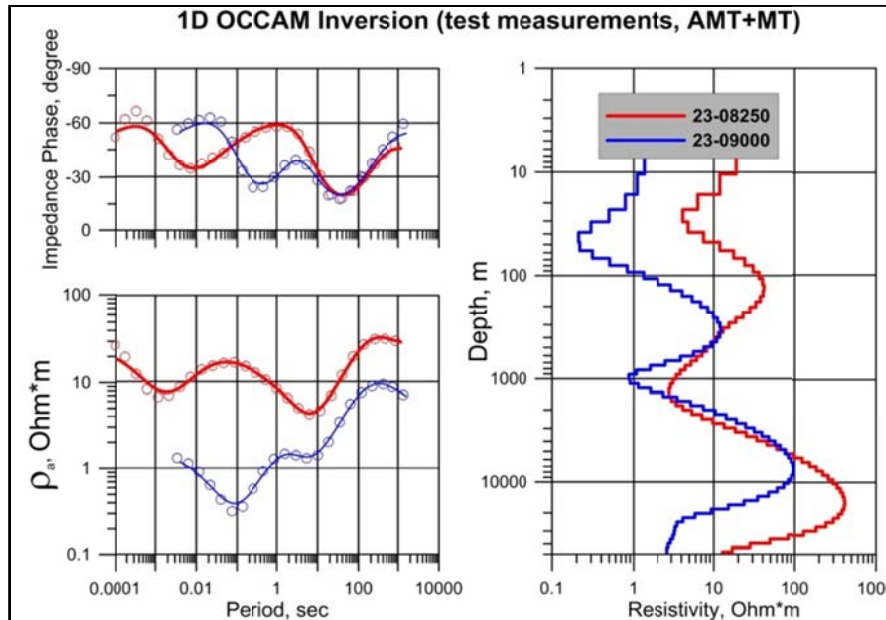
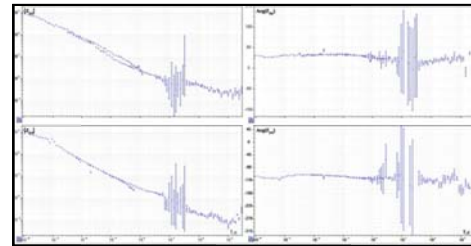
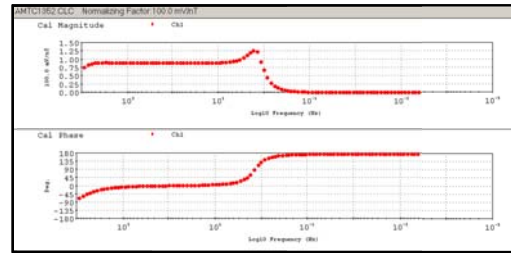
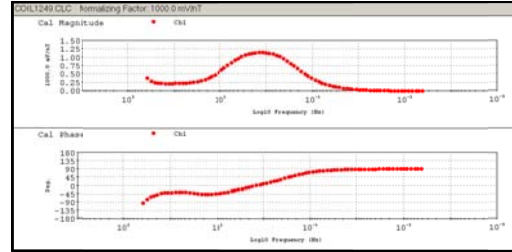
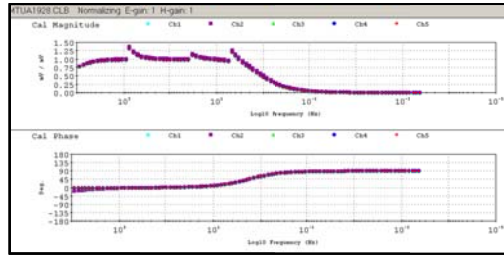


- Gravity and magnetotelluric survey, Nasrabad e Kashan salt structure studies, Abshirin, Iran (2013).
- Lar dam rehabilitation studies, Tehran, Iran (2008).
- Tehran metro, line 1 geophysical studies, Tehran, Iran (2006-2007).

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Geophysical investigations MT method

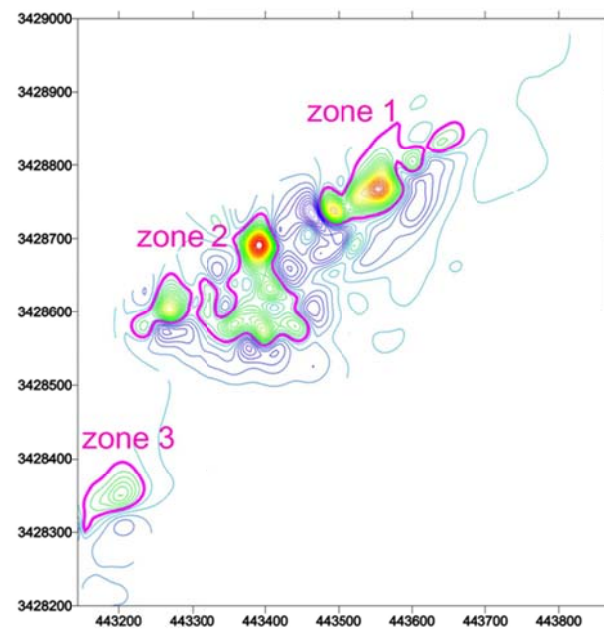
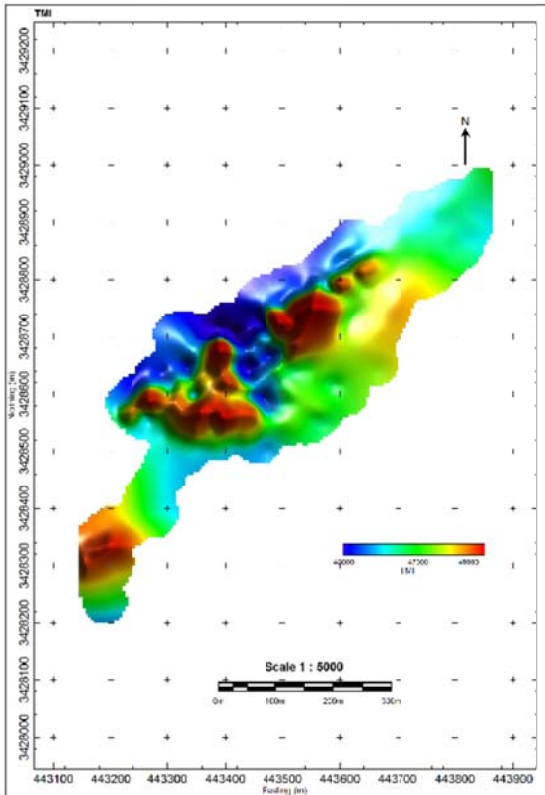


– Gravity and magnetotelluric survey, Nasrabad e Kashan salt structure studies, Abshirin, Iran (2013).

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Geophysical investigations Magnetometric method

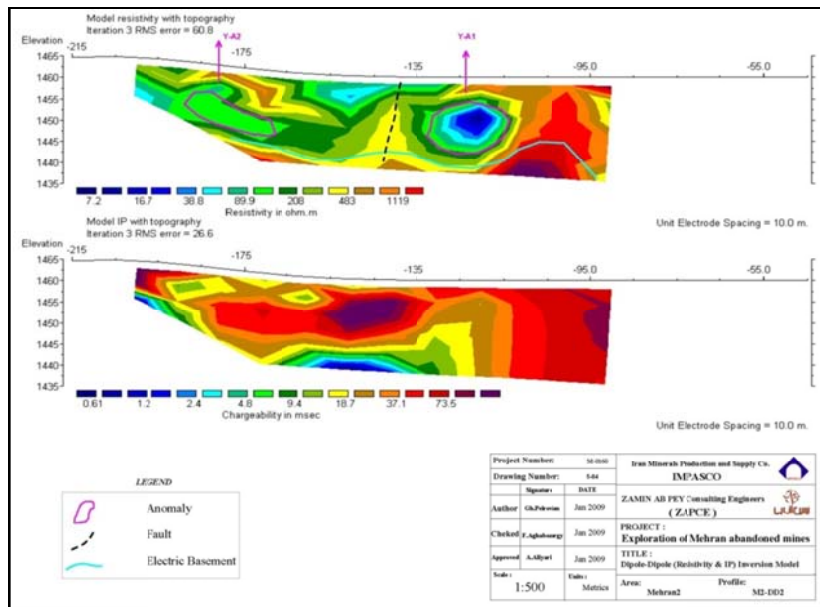
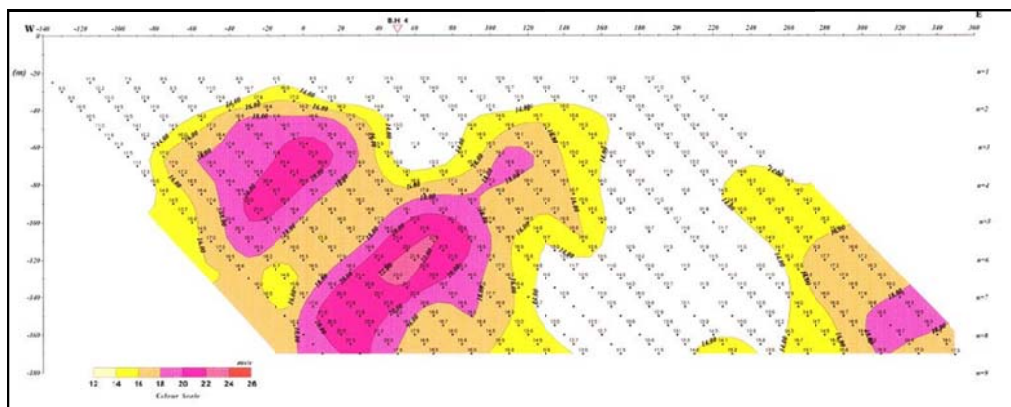
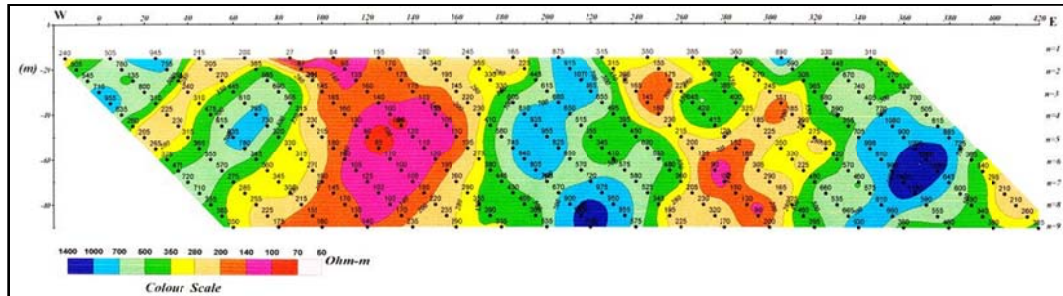


- IP & magnetometric geophysical investigations for mines in Kerman region, Kerman, Iran (2013).
- Mahzamin mine exploration, Zarand, Iran (2011).
- Chah Behshir mine exploration, Sirjan, Iran (2010).
- Hajiabad, Sirjan and Darab mines exploration, Fars, Iran (2009).
- Chah Bareh mine exploration, Golgohar, Kerman, Iran (2008).

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Geophysical investigations IP-RS method



- IP investigation in Jalalabad (Kerman) & Kahdelan (Azarbaijan) mines, Iran (2015).
- IP & magnetometric geophysical investigations for mines in Kerman region, Kerman, Iran (2013).
- Prospecting and exploration of metallic elements in SW of Takestan, Qazvin, Iran (2011).
- Exploration in abandoned metallic mines, Semnan, Iran (2007).

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Geophysical investigations

Geoelectric method



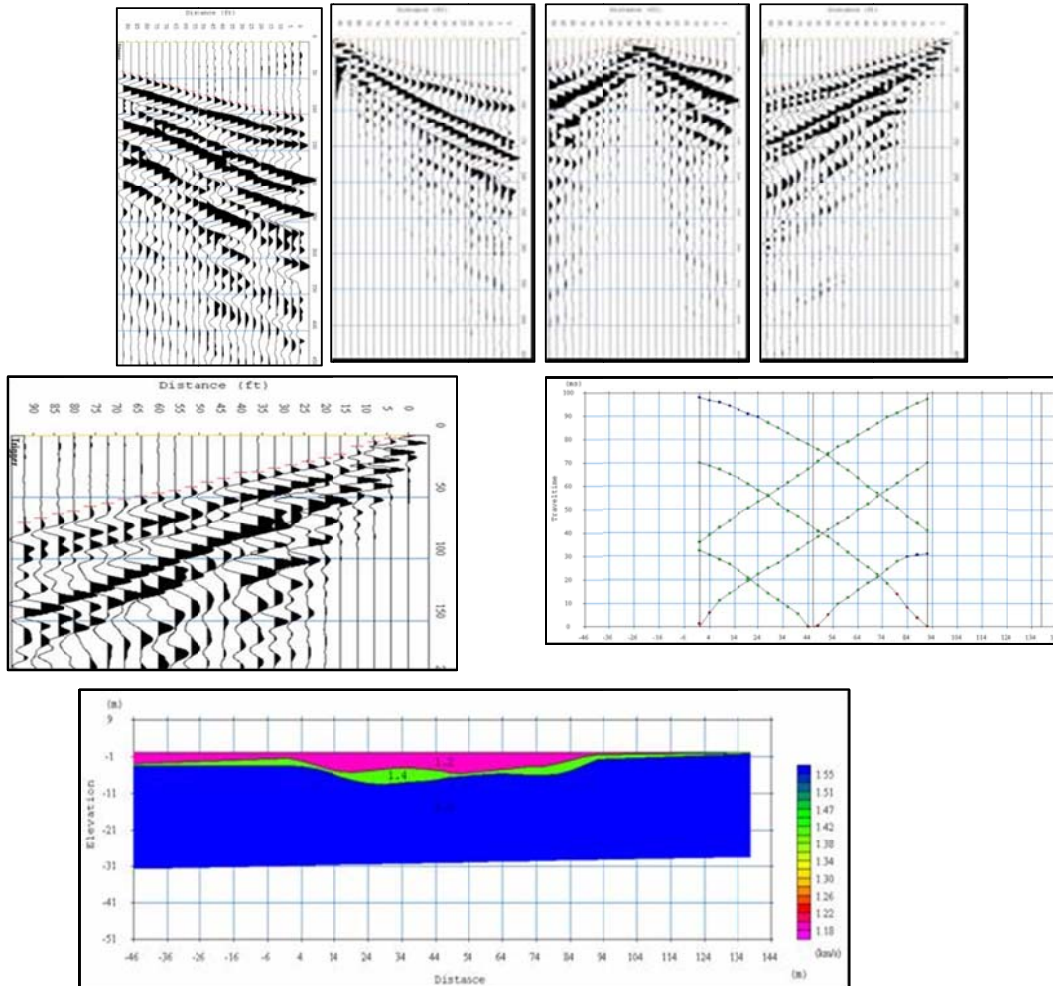
- Ground water potential evaluation in Borujen well location, Charmahal & Bakhtiari, Iran (2014).
- Investigation of water well location in Margh village (Kashan), Iran (2014).
- Investigation of water well location for Fazelabad city, Golestan, Iran (2013).
- Underground water potential evaluation in Noush Abad's well location, Kashan, Iran (2013).
- Investigation for water resources in Alibolaghi area, Ardabil, Iran (2013).
- Ground water exploration near Damavand city, Iran (2012).
- Ground water exploration for 4 industrial city, North Khorasan, Iran (2012).
- Lejamgir dam site studies, Zanjan, Iran (2012).
- Investigation for water resources in Afshar, Payam and Qare-Aghaj areas, east Azerbaijan, Iran (2012).
- Electrical resistivity measurement in 28 stations of the line 3 of Tehran metro, Iran (2011).
- Investigation for water resources in the hard formations of the North of Tehran province, Iran (2011).
- Investigation for water resources in Divandareh, Bijar and Baneh areas, Kordestan, Iran (2011).
- Investigation for water resources in Khalkhal area, Ardebil, Iran (2011).
- Investigation for water resources in Givi area, Ardebil, Iran (2010).
- Landslide investigation in Tang-e Bijar, Ilam, Iran (2009).
- Investigation for Mohammadabad dam site, Golestan, Iran (2008).
- Lar dam rehabilitation studies, Tehran, Iran (2008).
- Investigation along Sirjan-Hormozgan railroad, Iran (2008).
- Investigation along Semnan railroad, near Semnan station, Iran (2008).
- Investigation in Tehran SW plain for subsidence studies, Iran (2008)
- Lasak dam site studies, Gilan, Iran (2007).
- Investigation to detect Valiabad qanat, Varamin, Iran (2007).
- Tehran metro, line 1 geophysical studies, Tehran, Iran (2006-2007).
- Investigation for Siahposh, Manjil, Harzevil and Paskoolan wind farms, Gilan, Iran (2006).
- Landslide investigation in Shahriar dam road, Mianeh, Iran (2006).
- Investigation for water resources in Razi plane, Ardabil, Iran (2006).
- Investigation for water resources in Chardoli plane, Kordestan, Iran (2006).
- Investigation for water resources in Mahin plane, Qazvin, Iran (2006).
- Mashkan dam site studies, Kashan, Iran (2006).
- Investigation in Khezri & Dasht-e Bayaz, Khorasan, Iran (2005).
- Investigation along Qazvin-Rasht-Anzaly railroad, Iran (2005).
- Investigation for water resources in Hamedan cement factory, Hamedan, Iran (2005).
- Investigation for water resources in Tarq village, Natanz, Iran (2005).
- Barzok dam site studies, Qom, Iran (2005).

Geophysical investigations

Seismic methods

Study of body waves

Refraction seismic technique

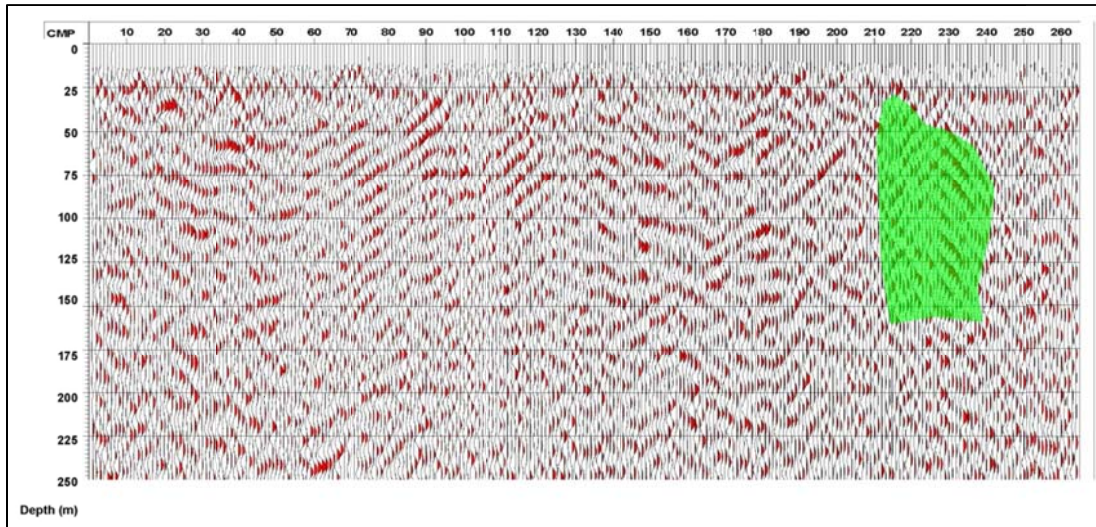


- Investigation in Dareh Aloo copper mine tailing dam, Kerman, Iran (2013).
- Investigation in Nochoun-Darehzar tailings dam, Sirjan, Iran (2012).
- Investigation in Sarcheshmeh tailings dam, Sirjan, Iran (2012).
- Ajisoo dam site refraction studies, Golestan, Iran (2011).
- Investigation in Kermanshah, Qazvin, Hamedan and Zanjan cities for seismic microzonation, Iran (2008).
- Lar dam rehabilitation studies, Tehran, Iran (2008).
- Investigation in Tehran SW plain for subsidence studies, Iran (2008).
- Mohammadabad dam site studies, Golestan, Iran (2008).
- Lasak dam site studies, Gilan, Iran (2007).
- Tehran metro, line 1 geophysical studies, Tehran, Iran (2006-2007).
- Investigation for Siahposh, Manjil, Harzevil and Paskoolan wind farms, Gilan, Iran (2006).
- Various minor projects in Tehran and other cities for different structures and sites.

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Geophysical investigations
Seismic methods
Study of body waves
Reflection seismic technique



– Lar dam rehabilitation studies, Tehran, Iran (2008).



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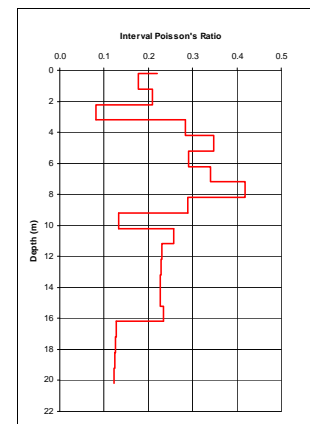
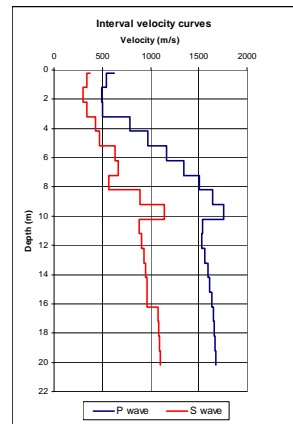
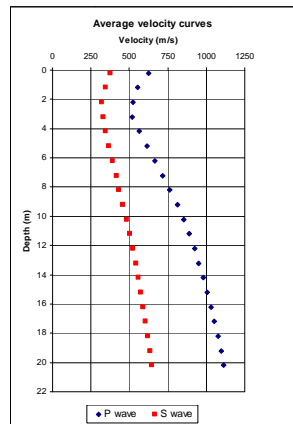
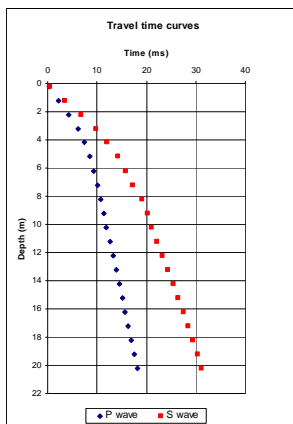
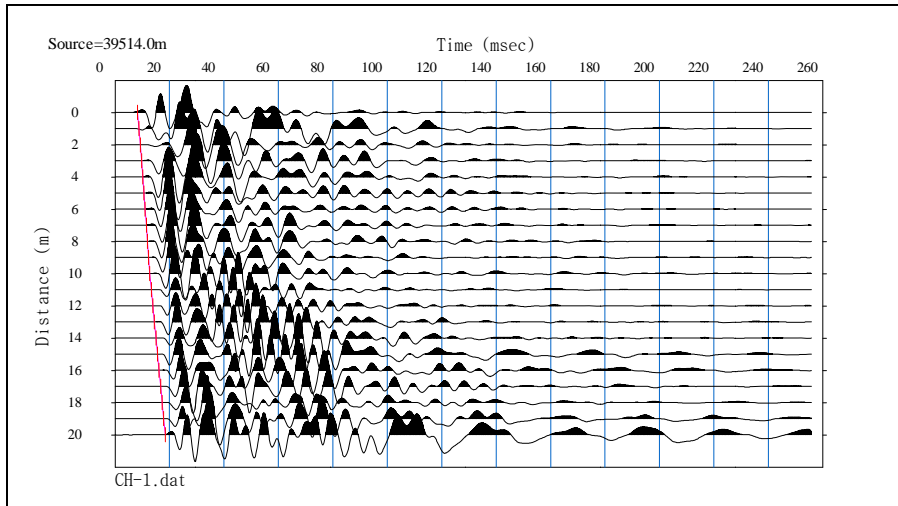
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Geophysical investigations

Seismic methods

Study of body waves

Borehole seismic technique



- Investigation in Khoy city for seismic microzonation, Khoy, Iran (2011).
- Investigation in Salmas city for seismic microzonation, Salmas, Iran (2011).
- Investigation in Mahabad city for seismic microzonation, Mahabad, Iran (2011).
- Investigation in Kashan and Naen cities for seismic microzonation, Iran (2010).
- Investigation in Tabriz city for seismic microzonation, Tabriz, Iran (2009).
- Investigation in Tehran SW plain for subsidence studies, Tehran, Iran (2008).
- Investigation in Hamedan cement factory, Hamedan, Iran (2006).
- Various minor projects in Tehran and other cities for different structures and sites.



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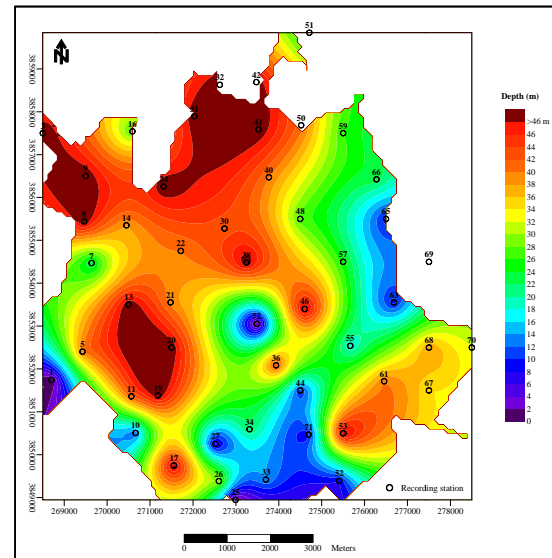
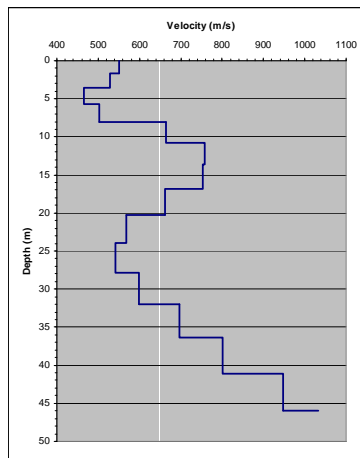
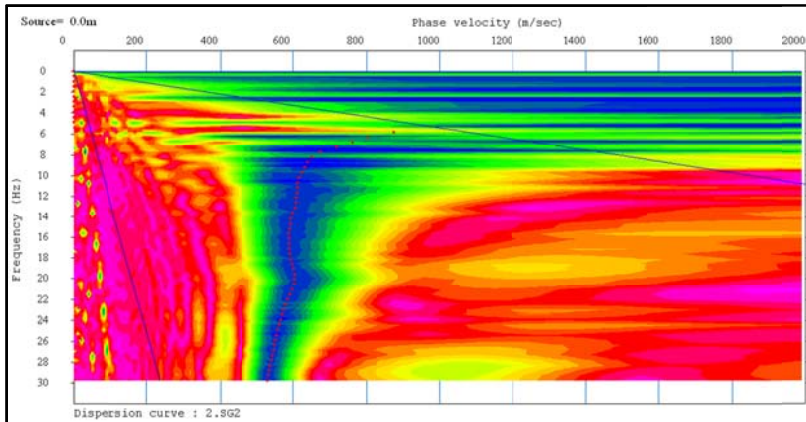


Geophysical investigations

Seismic methods

Study of surface waves

Spectral analysis of surface waves (SASW) technique

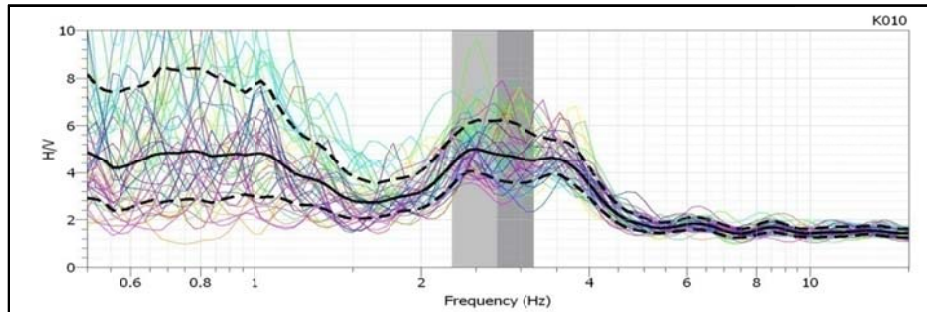
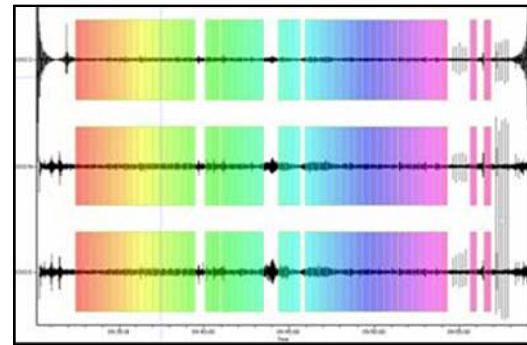
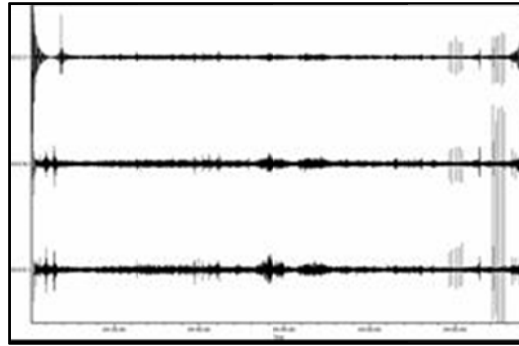
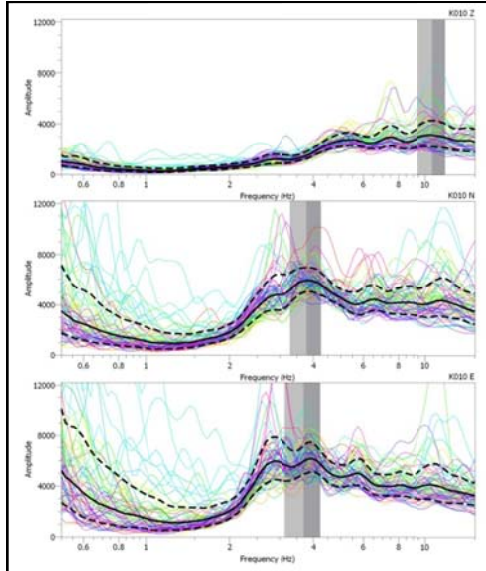


- Investigation in Dareh Aloo copper mine tailing dam, Kerman, Iran (2013).
- Investigation in Nochon-Darehzar tailings dam, Sirjan, Iran (2012).
- Investigation in Sarcheshmeh tailings dam, Sirjan, Iran (2012).
- Investigation in Kermanshah, Qazvin, Hamedan and Zanjan cities for seismic microzonation, Iran (2008).
- Lar dam rehabilitation studies, Tehran, Iran (2008).
- Investigation in Tehran SW plain for subsidence studies, Tehran, Iran (2008).
- Mohammadabad dam site studies, Golestan, Iran (2008).
- Lasak dam site studies, Gilan, Iran (2007).
- Various minor projects in Tehran and other cities for different structures and sites.

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Geophysical investigations
Seismic methods
Passive seismic
H/V spectral ratio technique



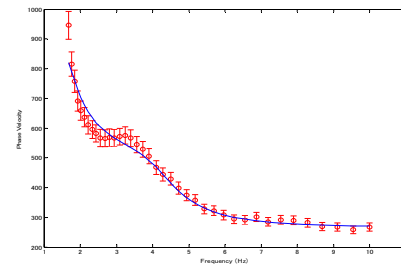
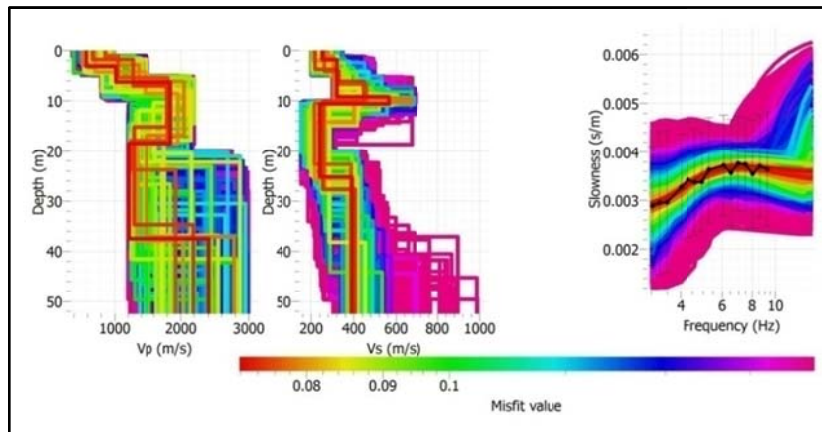
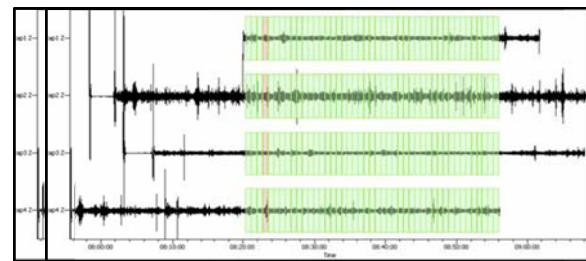
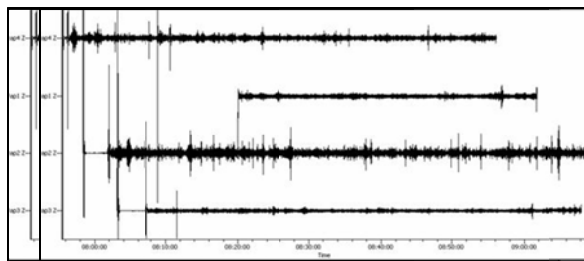
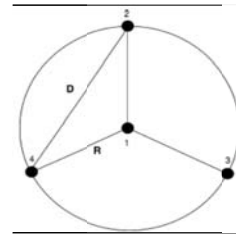
- Investigation in Khoy city for seismic microzonation, Khoy, Iran (2011).
- Investigation in Salmas city for seismic microzonation, Salmas, Iran (2011).
- Investigation in Mahabad city for seismic microzonation, Mahabad, Iran (2011).
- Investigation in Kashan and Naeen cities for seismic microzonation, Iran (2010).
- Investigation in Tabriz city for seismic microzonation, Tabriz, Iran (2009).
- Investigation in Tehran SW plain for subsidence studies, Tehran, Iran (2008).
- Investigation in Kermanshah, Qazvin, Hamedan and Zanjan cities for seismic microzonation, Iran (2008).
- Similar studies for various sites or structures.



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Geophysical investigations
Seismic methods
Passive seismic
Microtremor array technique



- Investigation in Khoy city for seismic microzonation, Khoy, Iran (2011).
- Investigation in Salmas city for seismic microzonation, Salmas, Iran (2011).
- Investigation in Mahabad city for seismic microzonation, Mahabad, Iran (2011).
- Investigation in Kashan and Naen cities for seismic microzonation, Iran (2010).
- Investigation in Tabriz city for seismic microzonation, Tabriz, Iran (2009).
- Investigation in Tehran SW plain for subsidence studies, Tehran, Iran (2008).
- Investigation in Kermanshah, Qazvin, Hamedan and Zanjan cities for seismic microzonation, Iran (2008).
- Similar studies for various sites

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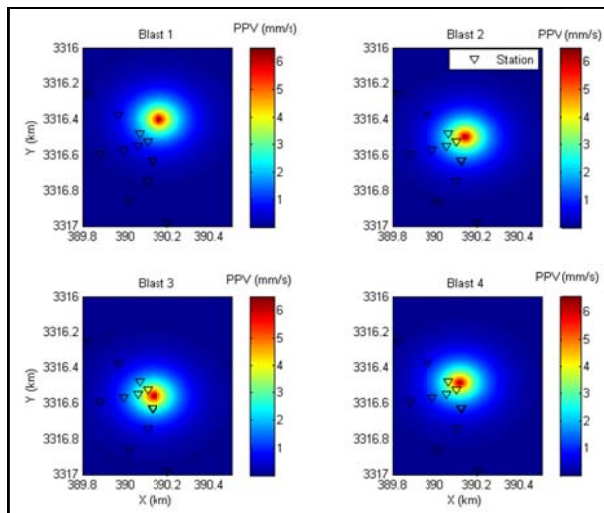
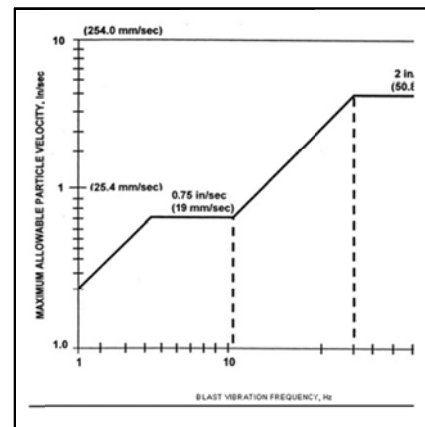
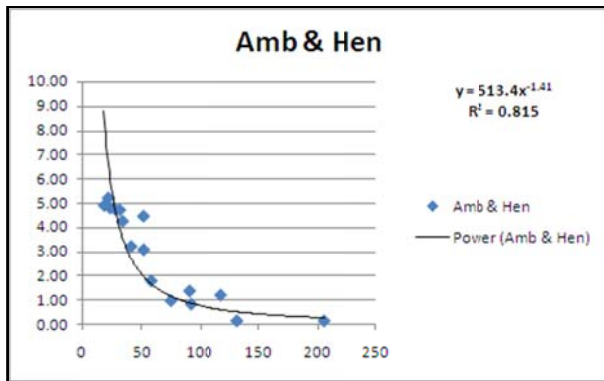
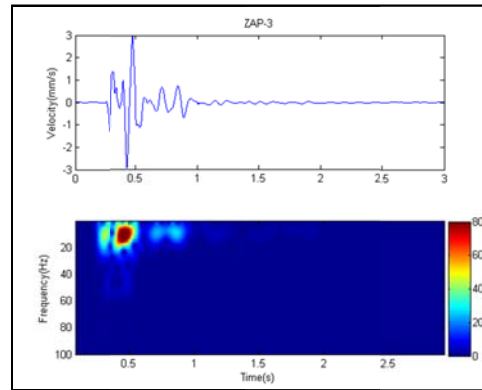
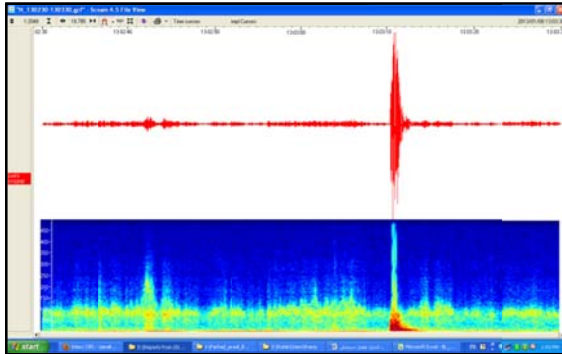


Geophysical investigations

Seismic methods

Blast vibrations control

Determination of peak particle velocity



- Blast vibration control studies for Sarcheshmeh copper complex, Sirjan, Iran (2013).

Geophysical investigations Ground penetrating radar (GPR) method



Ground penetrating radar system (LOZA, Russia)

Ground penetrating radar system (MALA, Sweden)



Mine exploration

- Deh sheikh & Shikhali chromite mine exploration, Hormozgan, Iran (2013).
- Neyriz chromite mine exploration, Fars, Iran (2012).
- Akhtarchi gold mine exploration, Khomein, Iran (2012).
- Investigation in Golgohar iron mine, Sirjan, Iran (2011).

Grounwater exploration

- Investigation for ground water in Verdij area (south of central Alborz), Teharn, Iran (2015)
- Ground water potential evaluation in Borujen well location, Charmahal & Bakhtiari, Iran (2014).
- Investigation of water well location for Margh village (Kashan), Iran (2014).
- Investigation of water well location for Fazelabad city, Golestan, Iran (2013).
- Ground water exploration in Jalin city, Golestan province, Iran (2013).
- Ground water exploration around Azadshahr city, Golestan province, Iran (2013).
- Ground water exploration for 2 sites in Aqboraz complex, Ahar city, Iran (2013).
- Ground water exploration near Damavand city, Iran (2012).
- Ground water exploration for 4 industrial cities, North Khorasan, Iran (2012).
- Ground water exploration in Semnan region, semnan, Iran (2012).
- Ground water exploration in Gorgan and Aliabad, Golestan, Iran (2012).
- Ground water exploration in Ivan, Chovar and Abdanan, Ilam, Iran (2012).
- Ground water exploration in Abdanan, Chenarbashi, and Rizevand, Ilam, Iran (2012).

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- Investigation for ground water on Aliabad and Dareh Zereshk mines, Taft, Iran (2011).

Civil & engineering geology

- Subsurface infrastructure identification, Javaneh bridge area, Shahid Kazemi Highway, Tehran (2013).
- Subsurface infrastructure identification between Aref St. and Khorasan Sq., Tehran (2013).
- Investigation along Tehran metro line 4 in Azadi street, Ostad Moein station, Tehran, Iran (2013).
- Investigation in the area of D6 station of Tehran metro, Tehran, Iran (2013).
- Investigation in the area of E6 station of Tehran metro, Tehran, Iran (2013).
- Takam landslide investigation, Sari, Iran (2012).
- Onar dam investigation to evaluate the leakage of water, Ardabil, Iran (2012).
- Esjil dam investigation for leakage evaluation, Khorasan, Iran (2012).
- Khansar dam investigation to evaluate the dam condition and water leakage, Khansar, Iran (2012).
- Karoon 4 dam investigation for dam body fracture identification and evaluation of grout curtain, Iran (2012).
- Investigation for Songon tailings dam stabilization, Azerbaijan, Iran (2012).
- Lejamgir dam site studies, Zanjan, Iran (2012).
- Landslide investigation in Posht-e Qaleh, Doroud, Iran (2010).
- Investigation in Bilaghan site (Karaj dam) for rock fall, Karaj, Iran (2010).
- Landslide investigation in Qalehchay dam reservoir, east Azerbaijan, Iran (2010).
- Shiraz metro, line 1 geophysical studies, Shiraz, Iran (2009).
- Investigation in 7th tir memorial site for underground anomalies, Tehran, Iran (2009).
- Investigation along Tohid tunnel, Tehran, Iran (2009).
- Investigation in Y1 metro station site, Tajrish square, Tehran, Iran (2009).
- Lar dam rehabilitation studies, Tehran, Iran (2008).
- Tabriz metro, line 1 geophysical studies, Tabriz, Iran (2008).
- Investigation along Azadi square-Karaj road, Tehran metro line 4, Tehran, Iran (2008).
- Investigation in helicopter's pad of Tehran disaster mitigation & management organization, Tehran, Iran (2008).
- Investigation along Tehran-Tabriz railroad, Tehran, Iran (2007).
- Investigation along Piroozi Ave., Tehran metro line 4, Tehran, Iran (2007).
- Investigation in Chahardange cultural center for underground anomalies, Tehran, Iran (2007).
- Investigation to detect Valiabad qanat, Varamin, Iran (2007).
- Investigation for qanat detection in Isar Ave., Tehran, Iran (2007).
- Tehran metro, line 1 geophysical studies, Tehran, Iran (2006-2007).

Life line & utility investigation

- Investigation to determine main concrete water pipe along Khavaran road, Tehran, Iran (2012).
- Investigation for life line along the Shahid Gornam highway, Tehran, Iran (2012).
- Investigation to determine the route of Eslamshahr main water pipe, Tehran, Iran (2012).
- Investigation for life lines along the 1400 meters designed sewer line in Gorgan city, Iran (2012).
- Investigation for life line along the Abozar tunnel project, Tehran, Iran (2012).
- Investigation for life line at the Valiasr crossroad, Tehran, Iran (2012).
- Investigation for life lines along the 200 km designed sewer line in kashan city, Iran (2011-2013).
- Investigation along Shahid Beheshti Ave., Tehran metro line 7, Tehran, Iran (2007).
- Different minor projects for various clients.

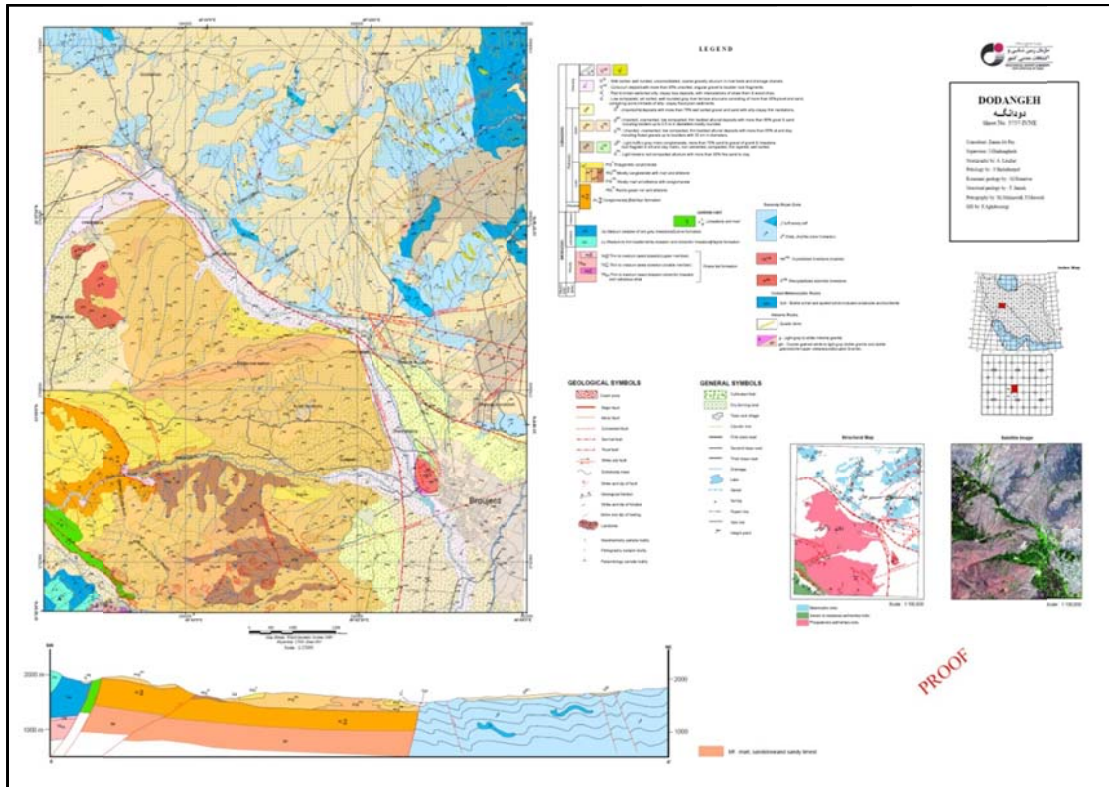
Archeology

- Investigation in Taq-e-Bostan historical area, Kermanshah, Iran (2011).

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Geology Geological mapping

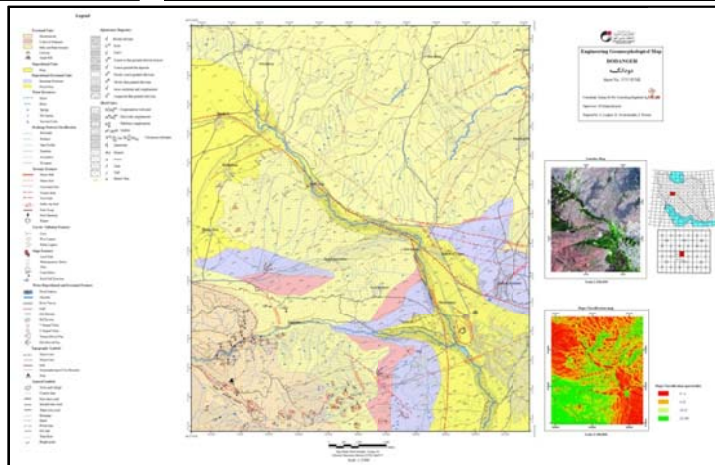
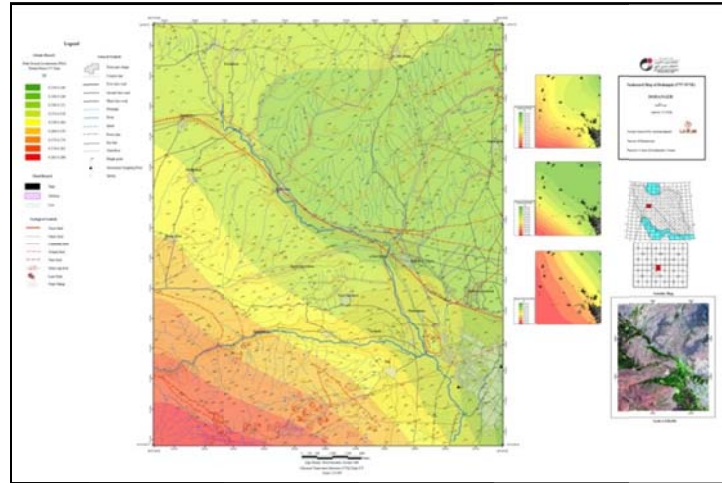


- Geological Evaluation based on Surface Geology Studies and Seismicity Studies In the area of Nasrabad-e Kashan Salt Structure, Kashan, Iran (2015).
- Geological maps (1:25000): Borujerd, Iran (2008); Dodangeh, Iran (2008).
- Geological map along the Nir-Sarab road (2005).

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**Applied geology
Applied geological mapping
Hydrogeology**

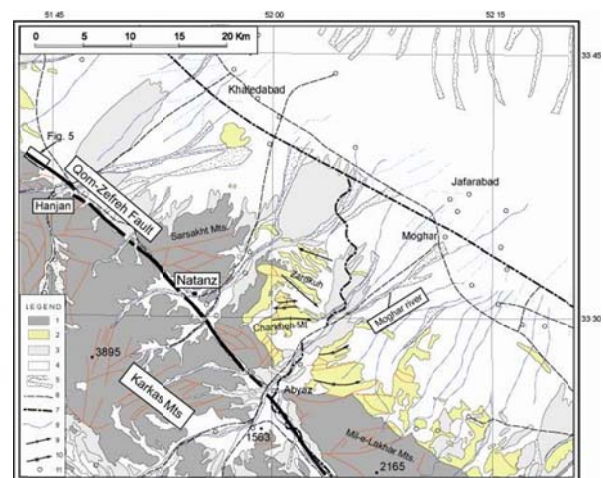
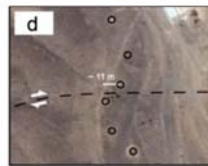
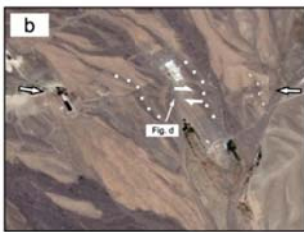
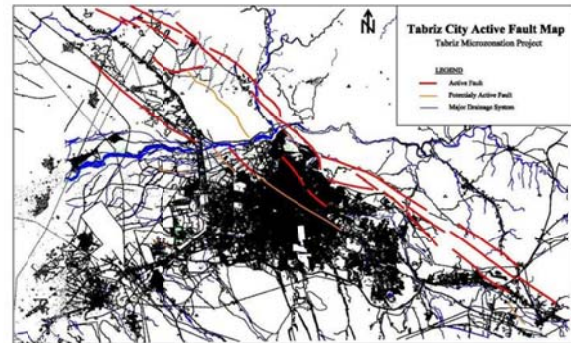
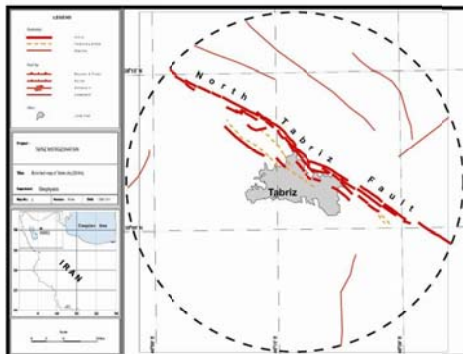


- Hydrogeology and geophysics study of groundwater in Romashgan & Konani area, Lorestan, Iran (2014).
- Hydrogeology and geophysics study of groundwater around Borujen city, Iran (2014).
- Study of indiscriminate use of groundwater and reduce of its hazard in Iran (2014).
- Complementary Studies of Water Supply Project For Developing of NasrAbad-e-Kashan Salt Dome Structure in Order to Natural Gas Storage, Iran (2014).
- Digitizing the mine and mineral maps for Lamerd & Mehr cities, Fars province, Iran (2013).
- Water resource investigation for the development of Nasrabad gas storage project, Kashan, Iran (2010).
- Engineering geomorphological maps (1:25000): Borujerd, Iran (2008); Dodange, Iran (2008).
- Geohazard and geoenvironmental maps (1:25000): Borujerd, Iran (2008); Dodange, Iran (2008).
- Engineering geology maps (1:25000): Kerman, Iran (2006); Borujerd, Iran (2008); Dodange, Iran (2008).
- Investigation for water resources potential in kashan region (2006).
- Geohazard maps (1:25000): Kerman, Iran (2006).
- Hidrogeological & geoenvironmental maps (1:25000): Kerman, Iran (2006).

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Active tectonics Active faults mapping



- Quadrangle maps (1:250000): Kashan, Iran (2006); Qom, Iran (2007); Saveh, Iran (2008); Borujen, Iran (2009).
- Maps (1:25000): Kerman, Iran (2006); Borujerd, Iran (2008); Dodange, Iran (2008).
- Cities: Tabriz, Iran (2009); Khoy, Iran (2011); Salmas, Iran (2011); Mahabad, Iran (2011).

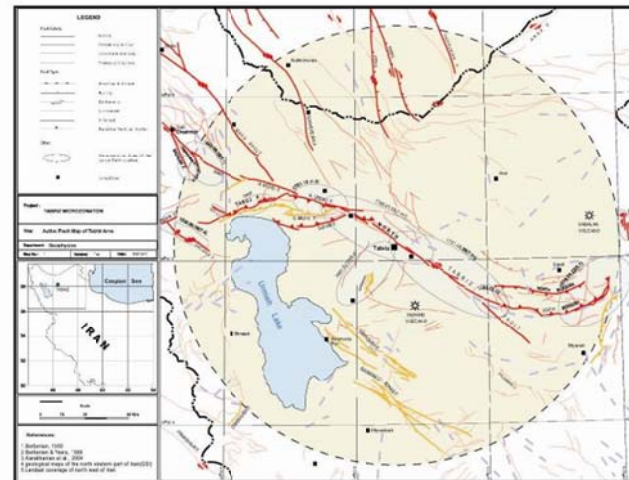
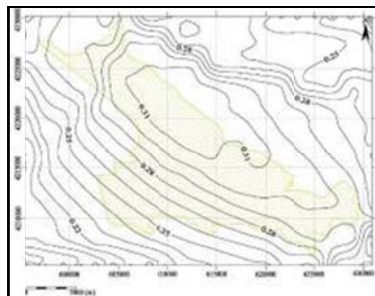
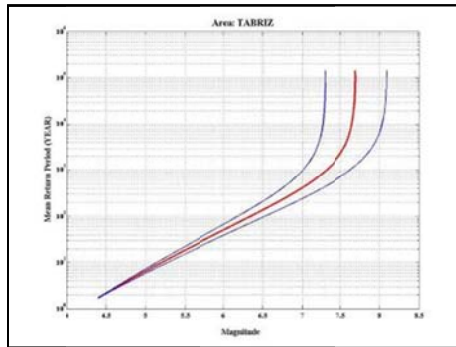
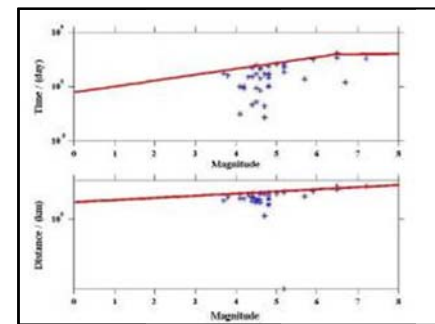
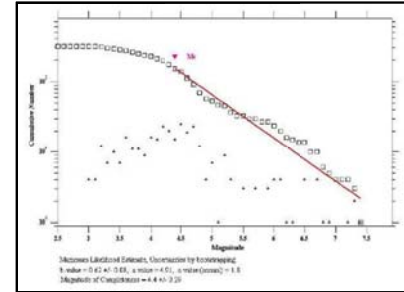
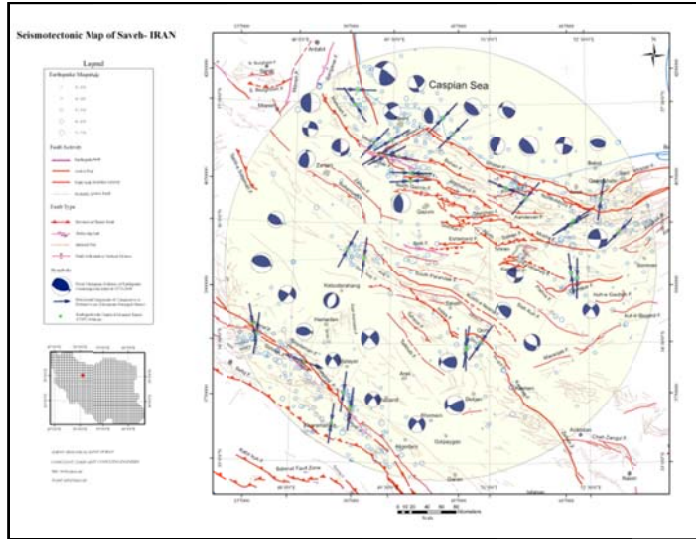
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Seismotectonics

Earthquake hazard assessment

Seismic microzonation



- Geological Evaluation based on Surface Geology Studies and Seismicity Studies In the area of Nasrabad-e Kashan Salt Structure, Kashan, Iran (2015).
- Quadrangle maps (1:250000): Kashan, Iran (2006); Qom, Iran (2007); Saveh, Iran (2008); Borujen, Iran (2009).
- Maps (1:25000): Kerman, Iran (2006); Borujerd, Iran (2008); Dodange, Iran (2008).
- Cities: Tabriz, Iran (2009); Khoy, Iran (2011); Salmas, Iran (2011); Mahabad, Iran (2011).
- Sites: dams, power plants, important sites and buildings.

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Geotechnical investigations



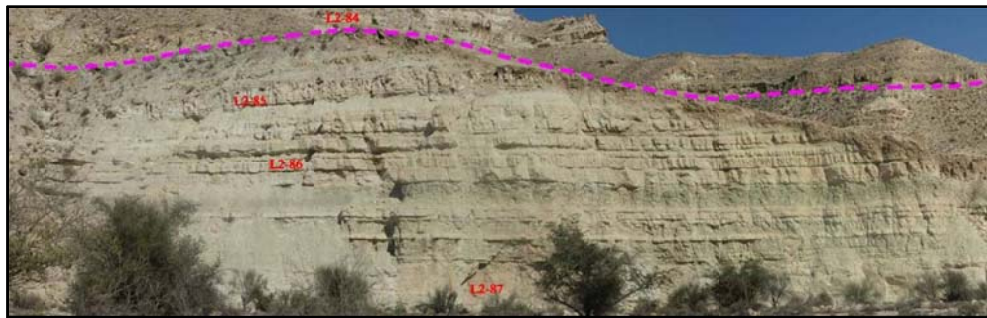
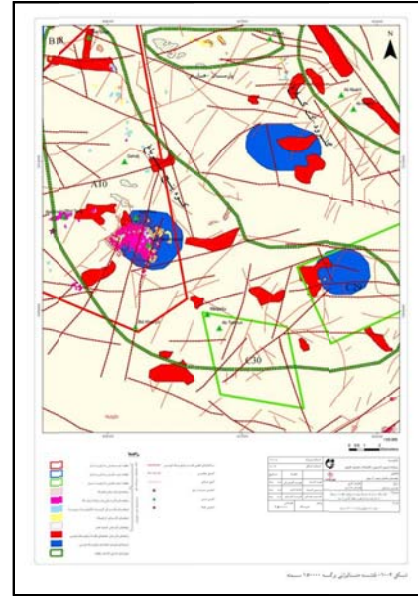
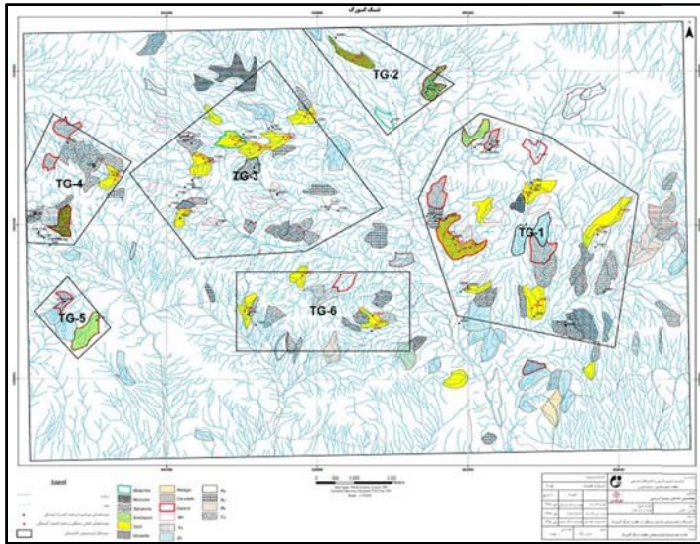
Field investigations and tests



Laboratory tests

- Stabilization studies in Bilaghan site (Karaj dam) for rock fall, Karaj, Iran (2015).
- Engineering and geotechnical studies for landslide & gully erosion south of Pol-e-Dokhtar city, Iran (2015)
- Studies of Landslides and their stabilization operations, Iran (2013).
- Takam landslide investigation, Sari, Iran (2012).
- Cheshmeh Malek dam site geotechnical investigation, Ilam, Iran (2011).
- Haraz dam site geotechnical investigation, Mazandaran, Iran (2011).
- Landslide investigation in Posht-e Qaleh, Doroud, Iran (2010).
- Investigation in Bilaghan site (Karaj dam) for rock fall, Karaj, Iran (2010).
- Kuhrang spring shaft geotechnical investigation, Shahr-e Kord, Iran (2010).
- Sarpari dam site geotechnical investigation, Yasoj, Iran (2009).
- Soil mechanic studies for Mehr Shamim (40 apartments) project, Shahr-e Kord, Iran (2009).
- Geotechnical investigation for Tehran metro station A4-4, Tehran, Iran (2008).
- Tehran metro's electricity stations geotechnical investigation (3 site), Tehran, Iran (2008).
- Soil mechanic studies for Mehrsara (120 apartments) project, Shahr-e Kord, Iran (2008).
- Soil mechanic studies for Setareh Talaei (200 apartments) project, Shahr-e Kord, Iran (2008).
- Various minor projects in Tehran and other cities for different structures.

Mine exploration
Geochemical exploration
Mineral prospecting
Core drilling and sampling



- Prospecting and exploration of metallic elements in SW of Takestan, Qazvin, Iran (2011).
- Geochemical exploration in Tang-e Gorak area, Fars, Iran (2009).
- Dolomite prospecting and exploration in south Lamerd region, Fars, Iran (2009).
- Exploration in abandoned metallic mines, Semnan, Iran (2007).
- Exploration in Rostagh, Tangoyeh and Samteh 1:5000 maps, North of Sirjan, Iran (2007).
- Geochemical exploration in Salafchekan Region with scale of 1:25000, Iran (2007).
- Prospecting and exploration of Bauxite Laterite and refractories in Gilan province, Iran (2007).



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Environmental studies



- Environmental impact assessment along Kerman-Bam highway, Iran (2008).
- Feasibility studies for construction of Ivan cement plant, Ilam, Iran (2007).

